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ABSTRACT

The document contains 22 appendixes which were cross-referenced in the final report of a study on the University of the Pacific's interdisciplinary program called School of Health Professions (SHP). Items include the following: (1-A) obesity study guide; (1-B) diabetes mellitus study guide; (1-C) hypertension study guide; (2) identification and priorization of health care problems; (3) the clinical units; (4) SHP external organizational options; (5) sample affiliation arrangement with clinical facilities for educational experiences for SHP students; (6) flow of information within the communication systems; (7) examples of problem, task, and learning resources catalogs; (8) problems in using catalog approach for tasks; (9) task matrices; (10) task utilization problems; (11) examples of task descriptions and extended task names; (12) the curriculum development process; (13) report of the task force for the consideration of SHP at the Pacific Medical Center/University of the Pacific (PMC/UOP); (14) final portion of feasibility study for SHP at PMC/UOP; (15) resources and services of the Pacific Medical Center; (16-A) details of determining SHP faculty requirements at full operational level; (16-B) determination of educational space and capital requirements for SHP at full operation level; and (16-C) explanation of income projections for SHP. (EC)

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APPENDICES TO THE
FINAL REPORT ON A
NEW SCHOOL OF HEALTH PROFESSIONS

VOLUME II

Submitted by:
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CE 006 002

VOLUME II
(APPENDICES)

CONTENTS

Appendix 1-A Obesity Study Guide
Appendix 1-B Diabetes Mellitus Study Guide
Appendix 1-C Hypertension Study Guide
Appendix 2 Identification and Prioritization of Health Care Problems
Appendix 3 The Clinical Units
Appendix 4 School of Health Professions External Organizational Options
Appendix 5 Sample Affiliation Agreement with Clinical Facilities for Educational Experiences for SHP Students
Appendix 6 Flow of Information within the Communication System
Appendix 7 Examples of Problem, Task, and Learning Resources Catalogs
Appendix 8 Problems in Using Catalog Approach for Tasks
Appendix 9 Task Matrices
Appendix 10 Task Utilization Problems
Appendix 11 Examples of Task Descriptions and Extended Task Names
Appendix 12 The Curriculum Development Process
Appendix 13 Report of the Task Force for the Consideration of a School of Health Professions at PMC/UOP
Appendix 14 Final Portion of Feasibility Study for a School of Health Professions at PMC/UOP
Appendix 15 Resources and Services of the Pacific Medical Center
Appendix 16-A Details of Determining SHP Faculty Requirements at Full Operational Level
Appendix 16-B Determination of Educational Space and Capital Requirements for a School of Health Professions at Full Operation Level
Appendix 16-C Explanation of Income Projections for a School of Health Professions

3/1

APPENDIX 1-A

(CITED IN CHAP. 2, VOL. 1)

OBESITY STUDY GUIDE

THE SCHOOL OF HEALTH PROFESSIONS FEASIBILITY STUDY
THE UNIVERSITY OF THE PACIFIC
PACIFIC MEDICAL CENTER
P.O. BOX 7999
SAN FRANCISCO, CALIFORNIA 94120
MAY, 1974

OBESITY MODULE: STUDY GUIDE

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OBESITY MODULE: A STUDY GUIDE

EXPLANATION OF THE MODULE

THE FOLLOWING, OBESTIY MODULE: A STUDY GUIDE, IS THE PLANNING STAFF'S INITIAL ATTEMPT TO ILLUSTRATE WHAT FORM CERTAIN ASPECTS OF THE CURRICULUM WILL TAKE. OBESITY IS BUT ONE OF THE HIGH-PRIORITY HEALTH CARE PROBLEMS THAT WILL PROVIDE THE FRAMEWORK FOR THE CURRICULUM. USING THIS STUDY GUIDE APPROACH AS A PROTOTYPE, OTHER MODULES WILL BE DEVELOPED FOR EACH OF THE MAJOR HEALTH CARE PROBLEMS SEEN MOST OFTEN IN AMBULATORY CARE AND THAT WILL COMPRISE MUCH OF THE FINAL CURRICULUM. THE VARYING LENGTHS AND DIFFERING EMPHASIS WILL REFLECT THE UNIQUE NATURE OF EACH PROBLEM AND ITS MANAGEMENT (e.g., THE FOCUS IN OBESITY MODULE IS ON BEHAVIOR CHANGE, RATHER THAN THE BIOCHEMICAL ASPECTS OF METABOLISM) AS IT AFFECTS PATIENT OUTCOMES.

IN THE DEVELOPMENT OF THESE MODULES (ESSENTIALLY A "PACKAGE" OF LEARNING EXPERIENCES, REFERENCE MATERIALS AND SELF EVAULATIONS) CONTENT EXPERTS SERVE AS DIRECT RESOURCES. CONTENT EXPERTS ARE PRACTITIONERS, OTHER HEALTH PROFESSIONALS, CLINICIANS AND BASIC SCIENTISTS WHOSE EXPERIENCE WITH THESE PROBLEMS BECOMES INTEGRATED INTO THE MODULE.STUDENT CRITIQUES ARE ALSO CRITICAL IN THE DEVELOPMENT. (STUDENT CRITIQUES REMAIN TO BE COMPLETED FOR THE OBESITY MODULE.)

TO FURTHER EXPLAIN THE MODULE THERE IS BRACKETED MATERIAL THAT IS DESCRIPTIVE AND ADDRESSED TO THE IMMEDIATE READER; MAJOR PORTIONS ARE ADDRESSED TO THE STUDENT. ASSUMPTIONS ARE MADE THAT ALL THE MATERIALS AND APPARATUS MENTIONED WILL BE AVAILABLE TO THE STUDENT.

TABLE OF CONTENTS

		HCC	MD
1.0 Introduction and Overview	A-1	*	*
2.0 Prerequisites	A-2	*	*
3.0 Obesity:			
3.1 Changing Behavior	A-3	*	*
3.2 Diagnosing the Problem	A-6	*	*
3.21 H.C.C. Entry and Information Gathering	A-6	*	
3.22 Recognition and Diagnosis of Obesity	A-10		*
3.23 Causes of Obesity	A-11	*	*
3.231 Basic Processes	A-11		*
3.232 Exogenous vs. Endogenous Obesity	A-14		*
3.24 Diseases Associated with Obesity	A-16	*	*
3.241 Symptoms and Signs of Associated Diseases	A-16		*
3.25 Relationships of Obesity to Associated Conditions	A-19		*
3.3 Planning and Implementing Management	A-21		*
3.31 Formulating Management Plans	A-21		*
3.32 Interprofessional Responsibilities	A-24	*	*
3.4 Monitoring Progress of Individual	A-24		*
3.41 Missed Appointments	A-25	*	
3.42 Interprofessional Responsibilities	A-26	*	*
3.5 Assessing Outcomes	A-27		*
3.51 Interprofessional Responsibilities	A-28	*	*
4.0 Other Illustrated Cases	A-29		*
5.0 Optional Advanced Work	A-31	*	*
5.1 Obesity Clinics	A-31		*
6.0 Post Test	A-33		*
6.1 M.D. Student Post Test	A-33		*
6.2 Health Care Coordinator Post Test	A-37	*	*
6.3 Interdisciplinary Responsibilities	A-38	*	*
7.0 Health Care Tasks and Related Performance Objectives	A-40	*	*

1.0 INTRODUCTION AND OVERVIEW (H.C.C. & M.D.)

Obesity is a widespread, complex health care problem with many psychological, sociological and physical aspects. It is estimated that there are some 40 to 80 million obese Americans, depending upon the criteria used. The presence of obesity can have substantial detrimental effects on the general health status of an individual. When treating a patient with this problem it is imperative that the health professionals involved explore with the patient the behavioral factors that influence eating, exercise and life style. The interrelationship of diet, exercise and life style serve to make obesity one of the most difficult problems for one person to manage effectively alone. Therefore, the effective cooperation of multiple health professionals is essential. The emphasis throughout the module will be on the knowledge and skills which are most likely to affect patient outcome.

This module will focus on the following aspects of obesity:

a) the role of personal, socio-economic, cultural, and life-style variables.

b) the basic biomedical processes related to how people get fat, including the differences between endogenous and exogenous obesity.

c) the wide range of treatment plans, all of which require extensive patient compliance, systematic monitoring and follow-up and provider-patient relationships characterized by collaboration and mutual participation.

This study guide suggests a variety of learning experiences, including references to texts and articles, self-instructional units, and experiences in the clinical unit. There are also self-evaluation questions throughout to help you assess your learning.

The performance objectives of the module and the professional tasks from which the objectives were derived are included at the end of the unit. You may wish to consult the objectives to understand how your performance will be evaluated for this module.

2.0 PREREQUISITES (H.C.C. & M.D.)

Because this module is designed so that it can be taken at any time after the orientation phase of the curriculum, there are no specific prerequisites. However, it is recognized that no two students will have identical degrees of knowledge about obesity and its management when they begin the module. Furthermore, as students you will have vary amounts of background in the basic sciences necessary for understanding the pathophysiology of obesity. For the medical student, the module refers to particular readings needed to understand the pathophysiology and biochemistry of obesity. If you are unable to understand these references, you should consult with your adviser who will help in identifying the area of weakness and recommending additional sources of reading. It is expected that several of you will request such advice. The rationale is that the best time to learn the material is as the need arises. A medical dictionary will prove invaluable to your understanding as you go, since many misunderstandings are related to lack of familiarity with terminology.

The specific skills of physical examination that will be needed for obesity are taught in the module as are the specific symptoms and signs that are important. However, the major prerequisite for the medical student is basic skill in interviewing; that is, skill in listening to the patient, observing for indirect verbal and nonverbal cues, sensitivity to the patient's feelings, skill in eliciting the patient's feelings and patterns, and in gaining the patient's confidence. For the health care coordinator student, the major prerequisite is successful completion of the "General Procedures" module.

If you have had substantial experience in the recognition and management of obesity you may already be qualified in the competencies required for the obesity module. If this is the case, review again the objectives and tasks listed in section 7.0 of the module, and discuss them with your adviser. If the adviser agrees that you have acquired these competencies, he will provide you with the post test for the unit. You will only need to study those components of the unit corresponding to the segments of the post test that you do not pass.

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3.0 OBESITY (M.C.C. & H.D.)

3.1. Changing Behavior:

The management of obesity is far more difficult than its diagnosis. Effective management often requires the patient to make significant changes in his behavior. Habits which have been reinforced for many years are not easily modified. This section of the module introduces you to obesity by asking you to scrutinize your own efforts at changing some form of behavior, e.g. diet, smoking, alcohol or some other persistent habit. The factors in your own life which impeded as well as those which facilitated change will be elicited. Think of two specific behaviors you wanted to change. Now answer these questions in respect to those behaviors.

1. What personal traits or characteristics can you identify now that in retrospect made it difficult for you to change your behavior?
2. What help or hindrance did you receive from others?
3. What did you do to try to overcome both the personal and environmental obstacles to behavior change?
4. Given your own efforts at personal change, what obstacles in your own behavior will you have to overcome in helping an obese patient change his behavior in some way? For example, if you are an individual with a high degree of self-discipline who tends to expect the same of others, how will you deal with this bias?

Next, you will be introduced to four patients who collectively illustrate factors frequently associated with the diagnosis and management of obesity. The four patients include a child [with iron deficiency anemia], an adolescent [with severe obesity and related emotional problems], and a male and a female adult [each with specific cultural problems related to their obesity]. A profile for each of the patients follows:

1. For each patient list the personal, cultural and socio-economic factors which in your estimation contribute to the patient's problem.
2. List what further background information you would like to elicit from each of the four patients.
3. Select any two of the patients and describe how the personal, cultural and socio-economic factors identified in your response to Question #1 affect each patient's obesity.

PATIENT 1 - JIMMY JONES is a thirteen year old boy brought to your clinic by his mother. His mother tells you that Jimmy wants to be excused from his physical education class because he gets teased a great deal by his peers about being so fat and uncoordinated. He is not doing well in school and his mother indicates that this disturbs Jimmy's father considerably. Mr. Jones is a postal clerk, and his wife tells you that he seems a little overweight, too. Mrs. Jones is a housewife; there are two other children, eight and five years old.

Physical examination reveals gynecomastia and an absence of pubic hair.

Height: 162 cms.; Weight: 82 kgs.

PATIENT 2 - CHARLENE WASHINGTON is a two year old black girl who weighs 14 kg and is 42 cm. tall. She weighed 3.5 kg. at birth. She appears somewhat pale. Her mother says that she drinks milk readily but no more than four 8 oz bottles each day. Besides milk she eats bread, butter, potatoes, rice, and ice cream. She loves soda pop and candy. She is the third child in the family (a brother three years old and a sister five years old).Both her mother and father work. During the day she and her brother are cared for by a neighbor who runs a day care center for five children. Charlene spends much of her waking hours in a play pen.

Motor and mental development appear grossly normal. Other than obesity and pallor her physical examination is unremarkable.

PATIENT 3 - JAMES BOND is a thirty-eight year old stockbroker. Mr. Bond tells you he is overweight again, this time about 15 kg., he thinks. He's been on diets before and always seems to gain back the lost weight. His last doctor told him that his blood pressure was elevated and that Mr. Bond should keep an eye on this in the future. Mr. Bond's work requires long hours, frequent travel throughout the country and much social entertaining at home. He dines out often, describes himself as a moderate drinker, two martinis before dinner. He likes to snack before and after dinner when he's home. Mr. Bond is married and has two children, ten and thirteen years old.

PATIENT.4 - MRS. THERESA TOMASETTI is a fifty-five year old woman who emigrated from southern Italy nearly forty years ago. She has a history of diabetes mellitus, the onset being ten years ago. Mrs. Tomasetti tolerates insulin well and is very faithful about taking medication. There is no history of insulin shock. However, her diabetes does require a carefully controlled diet in which carbohydrates and fats are eaten sparingly. There is no history of emotional problems.

Mrs. Tomasetti is being referred to you by Dr. Duff who feels he has been unsuccessful in managing her obesity problem. She tells you that Dr. Duff seemed too busy to really help her. She's happily married, all four children are also married and her youngest daughter, son-in-law, and infant grandchild all live with the Tomasettis in a comfortable three bedroom apartment.

3.2. DIAGNOSING THE PROBLEM (H.C.C. & M.D.)

For the health care coordinator, the first part of this section is concerned with 1) patient entry, initial information gathering, and extracting chart data for monitoring progress.

For the medical student, the rest of the section covers 2) the recognition and diagnosis of obesity, 3) the understanding of the basic biological processes related to how a person gets fat, including the difference between obesity brought on by exogenous causes, such as overeating, and obesity related to endogenous causes, such as hypothyroidism and 4) an introduction to some of the diseases that are frequently associated with and exacerbated by obesity.

3.21: Entry and Information Gathering (H.C.C.)

(The H.C.C.'s role in the greeting of an obese patient and initial information gathering differs only slightly from his/her role in greeting and gathering information from other patients. Before the H.C.C. student begins this module, the student will have been through the module "general procedures".)

1. Your role in the greeting of an obese patient and in information gathering differs only slightly from your role with other kinds of patients. Those techniques of greeting the patient: saying good morning, introducing yourself, bringing a book or coffee or adjusting the T.V. as needed, telling the patient approximately how long the wait will be, etc., remain the same. (See H.C.C. module on "general procedures", if you need to review the general procedures.)

2. It is important to remember that the obese patient is deserving of the same attention and respect as other patients. Obesity is a multifaceted health care problem and your attitude toward obese patients is very important.

REFERENCE: Stuart, R. & Davis, D.: "Slim Chance in a Fat World: pp 1-2.

(See audio visual presentation of H.C.C.greeting techniques.)

(The audio visual production shows different facial expressions of the H.C.C. as he greets patients and its affect on the patient. Demonstrating the wrong way to greet patients, the H.C.C. negatively reacts to the patient's appearance, and thus begins a strained relationship. When the H.C.C. greets the patient with a friendly positive attitude, the situation becomes relaxed and comfortable.)

SELF-EVALUATION

1. What characteristic do you generally notice first about a person?

2. Do you make quick decisions about a person based on these decisions? Does this alter your behavior toward them?

3. Examine your answer to 1 & 2. Do they reflect reactions that affect your behavior?

3. It will be your responsibility to make sure a minimum data base (MDB) has been acquired for each patient. (See module on "general procedures" if you need to review the minimum data base concept.)

4. You will check the MDB and determine if the information needs to be brought up to date and whether all the information needed is recorded. (See reference on the working procedures of the clinical unit.)

SELF-EVALUATION

Find hand-out labeled "Obesity Patients: MDB". There are six sample charts. Review these and identify any data that is missing or needs updating. You should be correct in 90% of the instances.

5. The height, weight and skinfold thickness measurements in obese patients are taken at the initial visit and succeeding visits. The accuracy of these measurements is important to determine the presenting condition of the patient and to record his progress. (A mistreading could cause undue anguish to the patient after a week of strict adherence to a diet).

Measuring the height and weight of patients is described in the following self-instructional unit:

> (An audio-visual production which deals with weighing and measuring height. It includes the proper technique for all ages & sexes, common errors, simple evaluation. Actual devices are available, as well as mannequins and a description of the final evaluation.)

To practice this, use the scale and height apparatus in the clinical unit, using another student or a volunteer. The following are points to remember:

a. instruction to the patient to wear only the provided gowns, no shoes.
b. assist patient onto scales if necessary
c. position patient properly on scales
d. manipulate the weighing and height apparatus according to the instructions on the equipment
e. help the patient off the scales if necessary
f. read and record weight and height in the proper place in the patient's chart.

SELF-EVALUATION

Measure the height and weight of 3 "known" people. One of these people should be an infant. Your accuracy should be to ± 1% of true weight and height in 90% of instances.

6. Measuring the skinfold thickness of the triceps is the best measurement used to recognize obesity. The H.C.C. will be required to take this measurement.

(See: audio visual production that deals with the use of calipers in measuring skinfold thickness.)

REFERENCE: Seltzer, C.C. and Mayer, J.: A Simple Criterion of Obesity: Post-Graduate Medicine: pp A104-A105: August 1965.

Important steps to remember are:

a. find the midpoint of upper arm.

b. pinch skin at dorsal aspect of midpoint to free from underlying muscle.

c. apply standarized calipers one cm externally from pinching fingers.

d. release calipers and read and record thickness.

e. retake caliper measurement.

Practice this on colleagues or paid patient volunteers in the Clinical Unit.

SELF-EVALUATION

Measure the skinfold thickness of the triceps on 3 people. Your accuracy should be within ± 1/2 mm in 90% of instances, as determined by an expert.

3.22 Recognition and Diagnosis of Obesity: (M.D.)

1) The best way to recognize obesity is to determine the thickness of the triceps skinfold using special calipers. Height-weight tables, long used as a quantitative method of determining overweight, have serious limitations and defects in determining actual obesity. True obesity is excessive fat, not just excessive weight. The relation of skinfold thickness to body fat content is virtually independent of height, permitting the establishment of a single value for each sex and age as the lower limit of obesity.

The technique is described very explicitly in the following reference: Seltzer, C.C., Mayer, J.: A simple Criterion of Obesity: Post-Graduate Medicine: pp A101-A107: August, 1965.

After you read this make an appointment in the clinical unit to practice caliper determination of triceps skinfold thickness and use the tables available in the article or in the clinic to judge whether the person is obese or not obese. You may practice on your colleagues or on the paid patient volunteers.

SELF-EVALUATION

1. What is the difference between being overweight and being obese? Give an example of someone who is likely to be overweight, but not obese.

2. Be able reliably to locate the appropriate spot on the arm to measure skinfold thickness and reliably to determine skinfold thickness on at least three people so that the readings are stable within at least the nearest one/half millimeter.

Signs and symptoms of diseases usually associated with obesity are reviewed later in this section.

3.23 Causes of Obesity: (H.C.C. & M.D.)

Most obese people are fat because their energy or food intake is greater than their energy expenditures. In other words, they usually eat too much. However, it is important to differentiate such exogenous causes of obesity from the endogenous, usually endocrine, causes such as hypothyroidism or hyperadrenalinism. (Endogenous diseases are those that are caused by some organic abnormality.) Although the overwhelming majority of obese people are obese for exogenous reasons, the few that have endogenous obesity must be recognized and appropriately treated.

3.231 **Basic Processes:** (M.D.) In order to understand the differences between exogenous and endogenous obesity it is necessary to understand the processes involved when a person "gets fat". In practice you are going to be faced with numerous obese patients, such as Mrs. Tomasetti in Section 3.1. As a physician you will obviously need to know a great deal about the basic science concepts requisite for an understanding of obesity. You should now contact your adviser who will set up a series of group sessions with several other medical students pursuing the obesity module. During these sessions you will work together to formulate the general and in the specific categories of information you will require to enable you to understand obesity. Following these initial sessions you will be directed to the basic science references listed below. Periodically your adviser will schedule a few more group sessions with basic scientists during which you will have opportunities to check whether or not you understand these concepts correctly and know how to apply them to the care of obese patients.

[The initial group sessions will follow a format of asking each student individually to list the major categories of information he will require. Later these categories will be shared and consensus will be sought to derive a list of categories that will cover the basic science topics relating to obesity. Then, for each category, the students will be asked to enumerate what kind of information he will be seeking and why. At the end of these sessions (probably two sessions of one hour each) each student will have obtained a list of questions both highly relevant to his grasp of obesity and to which he has contributed. These should provide a framework which should guide him in his studies of the basic sciences. It is also probable that the adviser would role-play a patient asking questions of a doctor to help the students formulate their categories of information they would seek.

At the end of the initial meetings, the adviser would arrange for subsequent meetings with resource basic science faculty during which the students could check their understanding of the basic science concepts they have been reading about.

The major purpose of these meetings is to help the student utilize his psychologic structure to develop a logical structure of knowledge of obesity. If successful he will be less a slave of memorization and more in control of what he studies - especially if he keeps the application of the basic science information constantly in mind.]

The following references are relevant to understanding the basic biochemistry, pathophysiology, and anatomy of fat accumulation.

OVERVIEW: "Obesity":Modern Nutrition Health and Disease: edited by Goodhart and Shils: pp 625-636
Obesity: Data & Directions for the 70's: edited by Stare,F.J.: New York:Med Com Press: 1974.

Netter, F.H.: Functional and Diagnostic Aspects of the Upper Digestive Tract: Vol. III: Digestive System, Part I, Uppe. Digestive Tract: pp 69-94.

Netter, F.H.: Secretory, Digestive and Absorptive Functions of Small and Large Intestine, Gastrointestinal Hormones, Viscreal Reflexes, Pathophysiology of Small Intestine and Colon: Vol. III: Digestive System: Part II, Lower Digestive Tract: pp 89-97.

PHYSIOLOGY: Guyton: on the physiology of the G.I. tract, including movement of food through the alimentry tract, secretory functions of the alimentry tract and digestion and absorption in the G.I. tract: Textbook of Medical Physiology: pp 738-774.

Mayer, J.: some aspects of the problem of regulating the food intake in obesity: New England Journal of Medicine: 274: 610-616, 662-673 and 722-731: 1966.

The University of Illinois, School of Basic Medical Sciences Curriculum, Vol. IV: Units 26-29, "Digestion and Nutrition General Description"; "Motility and Secretion: Neural and Hormonal Control"; "Absorption and Fate of Foodstuffs"; and "Liver Function."

BIOCHEMISTRY: Harper: Physiological Chemistry: Metabolism of Fat: pp 208-234.

NUTRITION: "Criteria of an Adequate Diet": pp 403-411, and "Physiology of Hunger and Satiety: Regulation of Food Intake": pp. 474-492: Modern Nutrition Health and Disease: edited by Goodhart and Shils.

ANATOMY: Hirsh and Knittle: Cellularity of Obese and Non-Obese Human Adipose Tissue: Federation Proceedings, 29: 15-16: 1970;

Bjorntorp and Sjostrom: "Number and Size of Adipose Tissue Fat Cells in Relation to Metabolism in Human Obesity: Metabolism, 20: 703-713, 1971.

EXERCISE AND OBESITY: Stuart: Slim Chance in A Fat World: pp 165-180.

HISTOLOGY: The University of Illinois, School of Basic Medical Sciences Curriculum, Vol. II: Histology: Unit 5, "Connective Tissue Proper"; Units 11-13, "Digestive System."

SELF-EVALUATION

Refer to the CRIB Program on the computer at the Learning Resources Center. There is a pool of test items which cover the basic sciences of the digestive system. The minimum passing level for each item is provided to enable you to compare your performance to that of other students. You can also refer to Tracht, et al., Basic Science Review Book, "Digestive System Basic Sciences". There are fifteen hundred comprehensive multiple choice questions providing review and self-testing material covering anatomy, physiology, biochemistry, pharmacology, and pathology. You should be able to answer correctly at least 75% of 100 questions you randomly select from the fifteen hundred, excluding those questions on pharmacology.

3.232 Exogenous versus Endogenous Obesity: (M.D.) If at this point you feel you have an understanding of the biological mechanisms involved in obesity, this section will provide the initial knowledge and skills for differentiating between endogenous and exogenous obesity.

Find the slide carousel marked "Obesity Module." Slides 1-7 are photographs of seven obese patients. At the completion of this part, based on historical information, visual differences, and to a lesser degree laboratory data, you will be able to identify those patients with exogenous obesity and those with endogenous obesity.

Turn now to the slide carousel, beginning with slide 1. Accompanying the slides are an audio tape and a hand-out, both labeled "Differentiation between Exogenous and Endogenous Obesity". When you have completed the unit, return to this study guide.

[This self-instructional unit will systematically present examples of normal fat and hair distribution in the obese adult and child and compare these to photos of fat and hair distribution in Cushing Syndrome and other instances of endogenous obesity. There will be illustrations of polydactylism and syndactylism, hypergenitalism and abnormal retinal pigment. There will also be illustrations of striae.

Built into the unit will be practice for the student in recognizing these signs, as well as presentation of illustrated case histories in which the student will practice differentiating exogenous from endogenous obesity. There will also be an introduction

to some of the laboratory exams that may be useful in differentiating endogenous from exogenous obesity, such as the dexamethasone suppression test, and urinary steroids.]

A typical case history (missing the slides) follows: try to decide whether this patient is likely to have obesity. If so, is it endogenous or exogenous? If endogenous, what studies seem appropriate to confirm your suspicions?

PRUDENCE PENNYWEATHER is a four year old caucasian girl also brought to your clinic for an initial visit by her mother. She is quite short, only slightly obese on appearance and very shy. Mrs. Pennyweather is concerned because Prudence seems a little "slow in developing"; that is, her vocabulary and verbal skills in general seem limited. Also, she tells you that Prudence has had an upset stomach lately and has not had a bowel movement for several days.

Further background information provided by her mother reveals the fact that Prudence was somewhat jaundiced at birth and remained so for about two weeks. She seems to get colds frequently but has a good appetite.

Physical Examination reveals skin slightly pale and dry.
Height: 94 cm. Weight: 20 kg.

[At the end of the slide-tape unit will be a post-test that will help the student evaluate his skill in making the critical recognitions and differentiations. The length of the unit will be approximately 1-1 1/2 hours.]

For your interest, the following references provide further information about the endogenous causes of obesity:

Danowski,T.S.:Endocrine Gland Syndromes:
pp 317-319;
Moloni,C.R.: Obesity or Cushing Disease:
A.F.P.: pp 93-97; June 1972;
When a Child Is Too Fat :Patient-Care:
pp 158-175: March 15,1974.

SELF-EVALUATION

Explain in a few sentences the pathophysiology involved in at least three examples of endogenous obesity and how these abnormalities are manifested in physical signs, symptoms and laboratory tests useful in diagnosis.

[A one to two page answer to this question would be available to the student.]

3.24 Diseases Associated with Obesity: (H.C.C. & M.D.)

There are several diseases frequently associated with and exacerbated by obesity. These include: diabetes mellitus, hypertension, pulmonary insufficiency, coronary insufficiency, arithritis and various serum lipid abnormalities.

In this segment you will learn how to recognize the major signs and symptoms of the above conditions, what laboratory tests to order that may help to rule in or rule out the problem, and how to interpret the laboratory tests. It is not expected that you will be able to make a definitive diagnosis, but at the minimum you should be able to recognize the signs or symptoms and define the problem at your level of knowledge.

If you are unfamiliar with any of the associated conditions refer to the Problem Catalogue for the introductory references to any of these conditions. The purpose of this section is not to provide your major understanding of these diseases.

3.241 Symptoms and Signs of Associated Diseases: (M.D.)

1. Diabetes: You should be able to elicit accurately defined symptoms of polyuria and polydypsia (particularly associated with fatique and weight loss.) You should be able to recognize and interpret glucosuria, abnormal fasting blood sugar, two hour post prandial blood sugar, and glucose tolerance tests.

Mrs. Tomasetti is a typical overweight diabetic patient.

REFERENCES:
Cecil and Loeb Textbook of
Medicine: pp 1294-1314;
Netter,F.H.: Endocrine System:
Vol. IV: p 171.

2. Hypertension: You should be able to define operationall clinical hypertension by interpreting elevated blood pressure level and evaluate end-organ complications such as: kidney disease (urinanalysis, B.U.N.) cardiac enlargement, and hypertensive retinopathy. James Bond represents one typical kind of overweight hypertensive patient.

REFERENCES:
Cecil and Loeb Textbook of
Medicine: pp 711-720;
Netter,F.H.: Heart: Vol.V:
pp 224-233;
Chiang B.N.,et al.:Overweight and
Hypertension: A Review Circulation
39: 403,1969.

3. Pulmonary Insufficiency: You should be able to recognize and evaluate symptoms of dyspnea on exertion and lethargy secondary to pulmonary insufficiency. You should be able to recognize cyanosis, abnormal chest x-rays, order and interpret pulmonary function tests, evaluate blood gases, and note hypercarbia.

REFERENCES:
Cecil and Loeb Textbook of
Medicine: pp 524-528; pp 574-579.

4. Coronary Insufficency: You should be able to recognize angina and differentiate it from other causes of chest pain, and recognize the variations of anginal pain. You should be able to recognize electrocardiagraphic evidence of coronary insufficiency, particularly post-exercise.

REFERENCES:
Cecil and Loeb Textbook of
Medicine: pp 681-703;
Netter,F.H.: Heart: Vol V:
pp 62 and 223.

5. Arthritis: You should be able to differentiate between arthralgia and true arthritis, as well as differentiate between degenerative and inflammatory joint disease, utilizing such signs and symptoms as nature of the pain, presence or absence of swelling, and redness, nature of the deformity, tenderness and interpretation of the laboratory tests (rheumatoid factor, erythrocte sedimentation rate.)

REFERENCES: Cecil and Loeb Textbook of
Medicine: pp 1468-1482 and
pp 1489-1491.

6. Serum Lipid Abnormalities: The student should be able to interpret cholesterol and triglyceride levels and interpret lipo-protein electrophoresis patterns.

REFERENCES: Cecil and Loeb Textbook of
Medicine: pp 1332-1336;
Netter,F.H.: Endocrine System:
Vol IV: pp 198-205 and 214-215.

After reading the references refer to the hand-out entitled "Signs and Symptoms of Diseases Associated with Obesity". This presents a series of case histories for you to practice recognizing abnormal signs and symptoms related to diseases associated with obesity.

[Some of the case histories will include slides or photos. A typical case history follows:

A forty-seven year old white female office worker is referred to you for weight loss. She weighs 76 kgs., is 163 cm tall, and her triceps skinfold measures 42 mm. She denies headaches, respiratory symptoms, chest pain. She complains of occasional pain and swelling of her left knee at the end of a day particular after doing work such as gardening. There's no polyuria or polydypsia. On physical exam the patient is an obese female with normal hair distribution, her blood pressure is 135/85, her reflexes are brisk and normal. The

physical examination is otherwise unremarkable and within normal limits. LABORATORY: CBS, urinalysis within normal limits, fasting blood sugar 110, and two hour post prandial blood sugar 145. Her serum cholesterol is 325, serum triglycerides 200, her EKG and chest x-ray are within normal limits. (Alternatively, a photo or other reproduction of the EKG/chest x-ray could be presented to the student for his own interpretation.)

Formulate a problem list from this description.]

3.25 Relationships of Obesity to Associated Conditions:

You should be able to explain the following:

a. How glucose metabolism and serum insulin levels are affected by obesity.

REFERENCE: El-Khodary,A.Z. etal.: Insulin
Secretion and Body Composition in
Obesity: Metabolism: 21:641,1972.

b How arm size effects blood pressure measurement.

REFERENCE: King,G.E.:Errors in Clinical
Measurement of Blood Pressure:
Clinical Science:32: 223,1967.

c How obesity effects cardiac work.

REFERENCE: Keys,A. et al.: Coronary Heart
Disease: Overweight and Obesity
as Risk Factors: Annals of Internal
Medicine: 77: 15, 1972.

d. How diet effects lipid levels.

REFERENCE: Goodhart and Shils: op. cit;
pp 895-908.

SELF-EVALUATION

For self-evaluation,go to the clinical unit and review ten charts of obese patients. Audit these charts to determine if the above-mentioned frequently associated conditions have been adequately ruled out or defined. To do this, you will need to prepare a check list to use in the chart audit. If you have never done this before refer to the module on "Chart Audit". (This is a skill that you will need for many of your patient modules as well as for your clinical experiences.)

3.3 PLANNING AND IMPLEMENTING MANAGEMENT

3.31 Formulating Management Plans:(M.D.)

As a primary care physician you are certain to encounter patients closely resembling those described in section 3.1 of this module. Refer as needed to those descriptions and in each instance assume that you have already verified that the patient is obese (e.g. excessive triceps skinfold thickness for age and sex), you have ruled out endogenous causes of obesity, and you are convinced that it would be in the patient's best interest to lose weight.

SELF-EVALUATION

You are not yet expected to be expert in planning the management of patients with obesity. However, based on your study thus far, attempt to answer the items below for each of the four patients in Section 3.1:

1. Specify the additional information you would need and what you need it for.
2. Formulate a treatment plan in chronological order.
3. Specify those factors in the scenario to which you would pay special attention.
4. State your prognosis concerning likelihood of correction of the obesity and maintaining a reasonable body weight.

Attempting to answer these now will help you focus on the critical areas involved in patient management. Following this, check your answer with the comments beginning on the next page. After the comments, references and exercises are specified to help you acquire competence in developing treatment plans for obese patients.

Review your comments about each of the four patients in respect to the following major points:

PATIENT CHARLENE WASHINGTON: a) the age, diet and pallor should make you suspect iron-deficiency anemia. (See module on iron-deficiency anemia). People often respond to the question "how much milk does your child drink each day?" quite literally-i.e. failing to take into consideration what the child drinks during the night! To avoid this problem you might ask about milk intake for 24 hours.

b) the diet and home situation should be explored. It is quite likely that this child is understimulated while in the care of the neighbor and is given food, candy or soda pop to "keep her quiet". It is also likely that her mother needs help in understanding nutrition and the dangers of "empty calorie"foods.

c) if hunches about understimulation are correct, treatment should include exploring ways of giving the child more stimulation for physical activity as well as increasing iron and decreasing carbohydrate intake. The neighbor watching the child must be involved and made aware of the plan.

d) prognosis should be good.

e) special attention should be paid to the use of greens that are high in iron, low in calories and at the same time indigenous to black culture.

PATIENT JIMMY JONES: a) the pattern of withdrawal from social contact (e.g. wanting to be excused from physical education class) and expectations of rejection (failure to do well in school recently), signify a difficult set of conditions to remedy in an adolescent trying to resolve his problems of identity, self-image and body image.

b) if his mother or one of his siblings is also obese it will reduce the prospects for a favorable prognosis. In any event Jimmy's problem is a difficult one to deal with and will require considerable perseverence and time.

c) your treatment plan should emphasize ways in which Jimmy can increase his social contacts and physical activity rather than stress diet. Diet is not unimportant, but exercise is more critical in obese adolescents.

PATIENT JAMES BOND: a) the patient's high rate of recidivism does not bode well for a permanent correction of the obesity.

b) special emphasis should be placed on ways for him to increase physical activity at work and at leisure, on arranging his environment so that he need not be tempted so often to eat high caloric foods, and on limiting his eating out and his alcoholic intake.

c) his wife should be brought into the planning process (with his assent) both as one responsible for his food preparation and also as his social monitor.

d) if his wife cooperates and he can change his work and life-style sufficiently and permanently, his prognosis should be good.

PATIENT THERESA TOMASETTI: a) in view of Dr. Duff's failure to help her the prognosis is not as favorable as it might be.

b) further information is critical in respect to her relationship with Dr. Duff, her home and family life. You would need to find out how she feels about food, dieting, insulin, her diabetes, etc.

c) once you are able to discern who are Mrs. Tomasetti's most important supports (family? friends?) you can incorporate them into the planning process and assure that they give her the required reinforcing feedback.

REFERENCE: Read chapters #3,5 and 7 of *Slim Chance in a Fat World* by Stuart, R.B. and Davis, B. (Research Press, Champaign, Illinois 1974). This reference should be of great help in formulating effective plans for obese patients. It will also give you insight into the problems associated with obesity that make it especially important to pay attention to the patient's life style and behavior patterns. At the end of Chapter 5 is a "Programmed Learning" section which will assist you in assessing your ability to help patients plan diets and exercise programs.

Now review your previous statements about each patient and revise them in light of what you now know. When you have finished contact your adviser and arrange a time to review your responses. At this time he(or she) will arrange for some role playing exercises for you as well.

3.32 Interprofessional Responsibilities:

As stated in the introduction, obesity is a very difficult problem to be handled by only one health professional. Much of what the physician will incorporate into the management plan is a result of data supplied by other health professionals.

To amplify this, pick one of the four patients described in Section 3.1 and report your choice to your adviser. He will arrange for you to meet with a health care coordinator or vice versa (student or faculty). This health care coordinator or physician will have certain information about the patient and you will be given more information about the patient. During a prescribed period of interacting, it would be your mutual goal to blend your dual information and arrive at a treatment plan better reflecting the patient's individual life style than either you or the M.D.(H.C.C.) student could accomplish alone. Your adviser will review your joint treatment plan.

3.4. MONITORING PROGRESS OF INDIVIDUAL (H.C.C. & M.D.)

Read Chapter 9 of Slim Chance in a Fat World. As you read, consider how you would apply the material to the four patients described in Section 3.1.

SELF-EVALUATION

Consider again the four patients from Section 3.1. With these patients in mind answer the following questions for each of the four patients:

1. How can you and the patient assess the patient's motivation?
2. How can you determine his progress?
3. How can the patient (or parent) determine his progress?
4. What variables should be identified and monitored?
5. How can you better assure the long term goal of weight loss (and maintenance of weight loss) in view of the slow and difficult process of losing weight?

In answering these questions describe the important considerations underlying your answer and end by writing the exact words you would put on the patient's chart to guide you in his management (i.e. the actual plan of management as it relates to each of the four questions). Then discuss your plans with your adviser.

3.41 Missed Appointments: (H.C.C.)

Miss appointments represent a major break in the continuum of care that is so important for the management of these patients. As you have learned in the "general procedures" module, notifying the patient the day before his scheduled appointment drastically reduces missed appointments. When missed appointments do occur, you will indicate that on the patient's chart and notify the appropriate health care personnel.

When you have contacted the patient to reschedule the appointment elicit and note reason for nonappearance on the patient's chart. Offer appropriate suggestions and specify help available through agencies. (i.e., social services, transportation, etc.)

Review the simulated cases involving telephone work and agency visits included in the hand-out "Missed Appointments-Obesity".

[These would present patient dialogue with gaps to be filled in for the health care coordinator components of the conversation.]

SELF-EVALUATION

Review ten simulated patient charts of obese patients and determine.

1. those patients who missed appointments.
2. the appropriate personnel to notify.
3. What assistance you can offer to the patient; including information about available agencies.

(These simulated patient charts will provide the student with asic knowledge of the patient background and some steps in the reatment and diagnosis plan. The health care coordinator will dentify those patients who missed appointments, the appropriate ethod of communicating this to the person directly responsible or that person and indicate any appropriate assistance the health are coordinator could offer to insure the appointment will be kept n the future.)

3.42. Interprofessional Responsibilities: (H.C.C. & M.D.)

Assuming that the patient and the M.D. have worked out a utual plan of management, there is still the evaluation of success. uilt into the plan should be a systematic mechanism for monitoring nd better assuring the patient's progress. For example, this might nclude periodic checks of patient visits. If so, the health are coordinator would need to work out a system of checking on issed appointments, and providing reminders of scheduled visits.

Many patients do not fully understand the directions given to en by physicians. Thus, the health care coordinator could and should ay a major role in assessing the patient's understanding of the tails of a treatment plan.

Contact your adviser and he will arrange a role playing exercise .g. one role - M.D. student; one role-H.C.C. student and one role- e patient).

(The M.D. student will describe a treatment plan to e "patient" out of earshot of the H.C.C. student. When this is nished, the H.C. C. student will attempt to make sure the patient derstands the plan and will check with the M.D. student, if there e any questions.)

During this role playing exercise you should specify what and progress is to be monitored and by whom.

3.5. ASSESSING OUTCOMES: (M.D.)

How good will be the results of your management of obesity? A good deal of attention will be paid to developing those general skills of outcome assessment before you graduate. (See module on "Chart audit".) Here we will focus on only one aspect of that assessment - namely, setting criteria for patient care.

In setting criteria there are two main considerations: First, what are the desired outcomes? Are the rates of morbidity and/or mortality acceptable? Did the patient improve? Was the improvement maintained? Outcome is also thought of in terms of diagnosis and therapy. For example, was the diagnosis correct? Was the therapy reasonable? Was it given in the right amounts, at reasonable intervals and by an acceptable route?

The second consideration, process, is important because we often lack suitable outcome criteria. Thus, we are usually forced to make reasonable assumptions that certain processes in the care of patients with a particular problem have a great likelihood of influencing outcomes. For example we may decide to create a process criterion concerning exercise - such as "each patient's chart should indicate a plan for a specified increase in exercise equivalent to at least 250 cal/day." We are assuming (and have some evidence to back up that assumption) that such a plan, if carried out, will be critical in most long range programs of weight loss.

SELF-EVALUATION

With this in mind prepare a list of patient care criteria for obesity which reflect (as best you can) the critical outcomes and those processes most critical to the desired outcomes. Submit these criteria to your adviser who will give you feedback on them and arrange a group session where several sets of criteria will be compared in an attempt at gaining consensus.

3.51. Interprofessional Responsibilities: (H.C.C. & M.D.)

When your criteria have been approved, show them to a health care coordinator student and request that he abstract five charts of obese patients from the clinical unit. Without any foreknowledge of the H.C.C.'s results, the M.D. student should also abstract the same five charts. Then you should compare each other's results and clarify misunderstandings.

4.0 OTHER ILLUSTRATED CASES: (H.C.C. & M.D.)

(The purpose of this section is to provide the student additional practice in applying what he learned in the preceding sections. Additional case histories in the form of photocopies of patient charts are presented. Relevant slides will accompany the charts. H.C. C. students will be asked to identify gaps in the minimum data base, and indicate areas in the management where they have a role and specify their behaviors (e.g. explanation of diet diary). They will also abstract data from the chart that are needed for monitoring prog-- Medical students will be asked to determine whether true obesity is present, differentiate (or order appropriate tests to help differentiate) exogenous from endogenous obesity, develop an appropriate management plan, and identify problems specific to the patient that may impede successful patient outcomes.)

Three Sample Patient Profiles:

PATIENT 1 - JACK MOFFETT is a fourteen year old white male who weighs 66 kgs. and is 168 cm. tall, triceps skinfold thickness of 19 mm. His mother brought him to you because "He seems so unhappy. He just sits around doing nothing."

Physical examination is unrevealing beyond the obvious obesity. Jack states that he has few friends, is teased a good deal about being fat and his interests are reading, television and coins. The quality of his school work has been slipping by his own admission.

PATIENT 2 - PAUL HERSHEY is a forty year old white male who is a middle level executive in a large firm. He feels he is getting too fat and wants your help in losing weight. Past medical history and physical examination are unrevealing other than obesity (triceps skinfold thickness of 24 mm, weight 90 kgs., height 176 cm, and a blood pressure of 140/90 in his right arm.)

His wife who accompanied him states that she has made an effort to feed him low cholesterol foods after reading about the dangers of heart attacks and fully supports her husband's efforts to lose weight.

PATIENT 3 - MRS. SARA EPSTEIN is a fifty-five year old white female who comes to you because of "being tired all the time". Physical exam reveals only obesity and no obvious reason for her fatiguability. (Weight 72 kgs., height 156 cms., triceps skinfold 32 mm., fasting blood sugar, BUN, chest x-ray, urinalysis and EKG are within normal limits.)

Mrs. Epstein lives with her husband in a two bedroom apartment on the third floor of a large apartment building. She has three married children, two of whom live near her. She became menopausal one year ago. Her interests are mainly centered around her family, including her grandchildren, but she does have close friends and plays bridge fairly often.

5.0. OPTIONAL ADVANCED WORK (M.C.C. & M.D.)

[When the student reaches a point of competence and comfortableness with the problem of obesity, his interest may lead him to desire advanced work. This section of the module will offer available activities that deal with a different aspect or a more complex phase of the problem than in the preceding sections. Electing to investigate the advanced work does not exempt the student from the post test. In fact, it might be that a student would turn to the advanced work after he had completed the post test.]

In this section you will find local activities that are related to the management of obesity, something about the activity and what further work you could possibly pursue. You might also have ideas of your own and these resources could provide you with the opportunity to work on them. You may wish to discuss these with your adviser.

5.1. Obesity Clinics:

Kaiser/Oakland - an ongoing obesity clinic located in Oakland. Contact Ms.____________ for further information.

Stanford University - under the direction of Dr. Stunkard, Chairman of the Department of Psychiatry, residents in psychiatry are conducting a study in the management of obesity. On Tuesday afternoons they meet in a group with patients who have enrolled and paid a fee to join this weight loss group. Primarily using behavior modification techniques, they have a good "model" of this approach. Attending the sessions and talking with the residents and research assistants would give you up-to-date information and more advanced information on any additional insights they have found.

Students who would like to be a part of a behavior modification group for obesity should have three hours a week available to attend these sessions. Because groups are used, you will most likely have to enter near the formation of each group.

Possible topics and activities:

-produce a working outline of how to set up a behavior modification program in obesity for PMC or another population.

- a profile of the "candidate" likely to succeed in a behavior modification program.

Contact Ms._______at ____________for an appointment.

6.0 POST TEST (M.D.)

6.1.: M.D. Student Post Tests: (M.D.)

Now that you have completed the module on obesity you should contact your adviser. He will arrange for you to take four kinds of evaluations. The first one will be a multiple choice, true/false type of test to assess your ability to recall information pertinent to the diagnosis and management of obesity. The second one will be a series of case study problems wherein you will be given some data about a series of case study problems and you will be asked to apply some of your knowledge of obesity. The third evaluation will be a series of five obese patients whom you will examine physically and make judgments re: exogenous versus endogenous obesity; laboratory studies; presence or absence of associated conditions; physical findings. The final evaluation will consist of five simulated obese patients or parents and your task will be to formulate a plan of therapy and, if feasible, to gain the patient's acceptance of one or more of the options in your formulation. Your plan should include several significant elements of behavior modification. Whatever the patient's decision you are to support him in that decision.

Type 1 Evaluation - multiple choice and true/false questions:

Samples:

1. The most frequent sign or signs associated with exogenous obesity of children is:
   - a. Height between 40-60th percentile
   - b. Height greater than 60th percentile
   - c. Height below 40th percentile
   - d. Hepatomegaly
   - e. Acne

2. The obese adolescent's problem is characterized mainly by:
   - a. "empty" caloric foods

b. decreased physical activity
c. social isolation
d. failing school work
e. all of the above

3. The most important factor in reducing caloric intake is:

a. avoidance of "empty" caloric foods.
b. increasing the number of meals each day.
c. use of anorectic agents
d. cooperation of social monitor
e. avoidance of hunger

Type 2 Evaluation - Case study problems:

On the next page (A-35) you will find information con-
rning five patients. Consult standard texts for normal limits.
page (A-36) you will find a list of fifty items arranged alpha-
tically. Record the number of each item on page (A-36) that is
ghly relevant to the particular patient on page (A-35). Record
e numbers in the blank area underneath the urinalysis data for
at patient. For each patient the important correct responses may
ry from one to many.

CASE STUDY PROBLEMS

PATIENT	#1	#2	#3	#4	#5
Age (years)	35	17	42	62	28
Marital Status	Single	Single	Married	Widower	Married
Sex	Female	Female	Male	Male	Female
Ethnic Background	Italian	American	German	Chinese	Black
Occupation	Secretary	High School Senior	Advertising Agency Exec.	Grocery Proprietor	Housecleaner
Height (cm)	155	170	175	165	173
Weight (kg)	68.6	74.5	88.2	72.7	78.2
Triceps Skinfold (mm)	32	28	26	22	33
Chief Complaint	I get nauseated and bloated whenever I eat fatty foods	I want to lose weight for my prom	Episodes of chest pain	yearly check-up	my right ankle hurts in the evenings.
Physical Exam.	R.U.Q. abdominal tenderness	within normal limits	liver pal-able 3 cm below RCM	within normal limits	decreased exer-cise tolerance & swelling of right ankle.
B.P.	150/100	110/65	128/60	135/83	130/82
Fasting Blood Sugar (mg%)	74	82	100	140	55
EKG	Normal	Normal	S.T. Segment Abnormal	Normal	Normal
Chest X-ray	ON VIEW	BOXES	FOR YOUR	OBSERVATION	
Sp. Gr.	1.024	1.018	1.028	1.014	1.015
Urinalysis-Glucose	Neg.	Neg.	Trace	Neg.	1+
Ketone	Neg.	Neg.	Trace	Neg.	Neg.
WBC/HPF	Rare	None	0-3	0.2	1-3
RBC/HPF	0	1-2	0-1	1-2	0-1
CASTS	0	0	n	occ. hyaline	0

For each item on the following page that you think is highly relevant to each patient-record that number here in the blank space for that patient.

1. Ankle x-ray
2. Barium enema
3. Behavior modification program
4. blood urea nitrogen
5. Cardiac catheterization
6. Cardiology consultation
7. Cholecystogram
8. Coronary insufficiency
9. Cystoscopy
10. Diabetes insipidus
11. Diabetes mellitus
12. Diet diary
13. Electroencephalogram
14. "empty" calories
15. Endocrinology consultation
16. Essentially normal patient
17. Exercise diary
18. Family counseling
19. Gastroenterology consultation
20. Glucose tolerance test
21. Group therapy
22. High protein diet
23. Hypertension
24. I^{131} uptake
25. Increase social contacts
26. Intravenous pyelogram
27. Liver function tests
28. Low cholesterol diet
29. Nitroglycerin
30. Nutrition consultation
31. Obesity
32. Orthopedic consultation
33. Prognosis (Obesity) - good
34. Prognosis (obesity) -guarded
35. Protein bound iodine
36. Psychotherapy
37. Rheumatic fever
38. Rhematoid arthritis
39. serum bilrubin
40. serum calcium
41. serum cholesterol
42. serum iron
43. serum lipids
44. serum uric acid
45. sigmoidoscopy
46. skull x-ray
47. surgical consultation
48. traumatic or degenerative arthritis
49. upper G.I. series
50. urine culture and sensitivity

Type 3 Evaluation - [These 5 obese patients will exhibit alone or in combination the following:

a. mild hypertension

b. grade I hypertensive retinopathy

c. liver enlargement

d. an endogenous cause of obesity (hypothyroidism, Cushing's etc.)]

Type 4 Evaluation - [These 5 simulated patients will be "programmed" to manifest the following:

a. an adolescent showing signs of obsessive concern with condition, passivity, withdrawal, expectation of rejection, all leading to unhappiness, social isolation and growing inactivity.

b. the importance of bringing the spouse or parent into the planning and social monitoring process.

c. a problem of ethnic diet substitution.

d. a cultural problem reflecting food ingestion as a desirable rather than an undesirable thing.

e. a need to reprogram daily routine to overcome the decreased energy expenditures of a sedentary job.

f. a lack of motivation.

g. a need to find increased avenues for leisure time exercise.]

6.2. HEALTH CARE COORDINATOR POST TEST: (H.C.C.)

Having completed this module on obesity you should contact your adviser. He will arrange a series of evaluations for you to see whether or not you have demonstrated the required levels of competence.

Your evaluations will be of several types:

Type 1 Evaluations - paper and pencil multiple choice and true/false tests. (See M.D.-Post Tests (6.1) for examples)

Type 2 Evaluations - psychomotor skills. You will be asked to weigh, measure the height and measure the triceps skinfold thickness of 5 patients within prescribed ranges of allowable error.

Type 3 Evaluation - simulated patients. You will be confronted by 5 simulated patients in your role as a health care coordinator. It will be your task to effectively greet the patient and gather the required information. You will be observed directly or by videotape and your performance will be rated by observers trained to look for specific behaviors.

6.3. Interdisciplinary Responsibilities Post Test:(H.C.C. & M.D.)

Type 1 Evaluation:

As an M.D. or H.C.C. student you will be given information about 3 simulated patients. In some instances the information will be the same and in other instances it will be complementary or conflicting. As members of a health care team you both will be observed as you deal with each other concerning this information and try to formulate a plan or monitor a patient's progress. Those observing you (directly or by videotape) will have been trained to look for specific behaviors,such as clarification, facilitation, problem resolution, etc.

Type 2 Evaluation:

[The delivery of team health care necessitates continuous communication between health professionals. Staff conferences held at regular intervals provide time for a thoughtful and productive review of the patient's progress. Every health professional interacts with the patient and can add his observations to the total picture of the patient. The H.C.C. sees the patient outside the M.D.'s office. How does the patient's behavior differ with each of these health professionals, and why? And, how does each health professional communicate his impressions of the patient to other health professionals for a more accurate assessment of the patient and his needs?]

You are familiar with and have experienced group process techniques, some of which are: careful consideration of each idea presented, taking time to clarify points made and their development, and making decisions based on shared contributions to the discussion. The

treatment, management and monitoring of an obese patient requires special attention to the patient's motivation, the patient's special needs and limitations and an individualized treatment plan. These are areas that can best be explored and worked out with the health care team.

You have the opportunity in your interdisciplinary team meetings to discuss team care of the obese patient. First observ in the clinical unit the team approach to obesity. Note points you wish to discuss and share with your interdisciplinary team. There are available sample obese patient histories that you may present to your team. The roles of the various health professionals and the patients could be exchanged until each team member has the opportunity to role-play each part. Discuss the reactions. (You might find that writing your own case history could incorporate your own ideas about obesity developed during this module.)

[Students will meet regularly with their interdisciplinary teams and will be able to plan programs, such as the above, for these meetings.]

Team work can be evaluated by observation of the group process considering the following: how fully the presented problem was delineated, how well each person's ideas were incorporated and how many options were arrived at by the group. The outcome of the group process is not the major criterion for evaluation;rather, the particip of each member must be considered. Each person must feel comfortable with the group and know his contribution will receive equal consideration.

Video taping group sessions will provide you and your team members the opportunity to discuss and evaluate your performance. Your adviser will assist in the evaluation of the tape.

7.0 HEALTH CARE TASKS AND RELATED PERFORMANCE OBJECTIVES (H.C.C. & M.D.)

PERFORMANCE OBJECTIVES	TASKS
1. M.D. and H.C.C.-Given 10 patients of varied sex and age, the student should be able to weight and record the weight (with ± 1% of true weight) measure and record the height (within ± 1% of true height), and measure and record the triceps skinfold thickness (within ± 1 mm) in 90% of instances.	#161: Weighing and measuring any patient . . . #161A: Measuring selected skinfold thickness . . .
2. M.D. - Given 20 patients, all with data on their height, age, sex and triceps skinfold thickness, the M.D. student should be able to discriminate correctly in 90% of instances between non-obesity, borderline obesity, and definite obesity.	#1002: Diagnosing any adult patient for obesity, determining etiology, and deciding whether to go ahead with treatment planning . . . #1003: Diagnosing a pediatric or adolescent patient for obesity, determining etiology, and deciding whether to go ahead with treatment planning . . .
3. M.D. - Given current data on the family history, past history height, weight, age, sex and skinfold thickness and serial data on the weights and skinfold thicknesses of 20 patients, the M.D. student should in 90% of instances be able to select those patients most likely to become obese if present patterns of weight gain persist unchanged.	(Same as above #1002, and 1003)
4. M.D. - Given 10 obese patients (7 adults and 3 children) the M.D. student should be able to make appropriate presumptive discrimination between endogenous and exogenous obesity and order the laboratory tests appropriate to these discriminations.	(Same as above #1002 and 1003)
5. M.D. - Given 10 obese patients the M.D. student should be able to detect in 80% of instances the presence or absence of frequently associated conditions such as diabetes mellitus, hypertension, pulmonary insufficiency, coronary insufficiency, arthritis, liver disease or gall bladder disease and serumlipid on major signs and symptoms of these conditions.	(Same as above #1002 and 1003)
6. M.D. - Given 10 obese patients the M.D. Student should be able to formulate the major social, economic and psychologic factors associated with their obesity, and determine those influencing the patient in seeking help in 80% of instances.	(Same as above #1002 and 1003)
7. M.D. and H.C.C. - Given 10 obese patients, the M.D. student should be able to determine their average daily exercise expenditure (within ± 10%) in 90% of instances.	#1006: Planning a treatment program for obesity control with any adult or adolescent . . . #1007: Planning a treatment program for obesity control . . . (cont'd)

PERFORMANCE OBJECTIVES	TASKS
7. . . .average daily exercise expenditure . . .	#1011: Assisting obese patient with design of exercise program . . .
8. M.D. and H.C.C. - Given 5 obese patients the student should be able to instruct the patients in how to keep a food and exercise diary including notations of mood related to food ingestion.	#1004: Instructing adolescent or adult patient in preparation of daily food intake history and/or activity chart for use in obesity control . . . #1005: Instructing parent or guardian of pediatric patient in preparation of daily food intake history and/or activity . . .
9. M.D. - Given 10 obese patients the M.D. student should be able to formulate an appropriate plan of management for 80% of them.	#1007: Planning a treatment program for obesity control . . .
10. M.D. - Given 10 obese patients the M.D. student should be able to convince patient to choose appropriate options of a management plan and assist patients in understanding details and implications of the plan in 80% of instances.	#1008: Assisting obese patient, or parent or guardian of obese patient, in design of a therapeutic and/or reducing diet . . . #1011: Assisting obese patient with design of exercise program . . .
11. M. D. - Given 10 obese patients the M.D. student should be able to elicit their major "conscious" concerns and be empathetic, reassuring and accepting when required.	#113: Giving any patient general reassurance by . . .
12. M. D. - Given 3 obese patients, the M.D. student will be able to design an operant condition/behavioral modification program for an in-office support of patient, providing for management and reinforcement.	#1012: Designing an operant conditioning-behavioral modification program for in-office support of adult or adolescent obese patient and providing for management and reinforcement . . . #1012A: Designing an operant conditioning-behavioral modification program for in-office support of obese pediatric patient and providing for management and reinforcement. . .
13. M. D. and H.C.C. - Given a group of patients, the student will be able to conduct a series of group sessions designed for patients to ventilate feelings re: self and obesity and body image; explore emotional problems associated with obesity; develop a supportive atmosphere of helping one another.	#1013: Leading group session to reinforce obesity control program . . .

PERFORMANCE OBJECTIVES	TASKS
14. M.D. - The student will be able to contribute effectively to a staff discussion by: communicating his thoughts and feelings openly; listening to the thoughts and feelings of other staff; clarifying agenda and decision-making issues; encouraging and supporting other staff's views; incorporating others ideas and suggesting; sharing leadership for such meetings with other staff.	#1016: Participating in staff meeting to discuss progress of patients in obesity control programs . . .
15. H.C.C. - Given 50 charts of patients with a diagnosis of exogenous obesity the H.C.C. student should be able to discriminate between those which do and those which don't meet pre-selected criteria of care and/or compliance in 90% of instances.	

May 24, 1974

APPENDIX 1-B

(CITED IN CHAP. 2, VOL. I)

DIABETES MELLITUS STUDY GUIDE

THE SCHOOL OF HEALTH PROFESSIONS FEASIBILITY STUDY
THE UNIVERSITY OF THE PACIFIC
PACIFIC MEDICAL CENTER
P.O. BOX 7999
SAN FRANCISCO, CALIFORNIA 94120

AUGUST, 1974

DIABETES MELLITUS STUDY GUIDE

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DIABETES MELLITUS STUDY GUIDE

Explanation to the "non-student" Reader

THIS STUDY GUIDE ILLUSTRATES THE CURRICULAR METHOD THAT WILL BE USED BY STUDENTS OF THE SCHOOL OF HEALTH PROFESSIONS TO LEARN HOW TO PREVENT AND RESOLVE HIGH PRIORITY PROBLEMS.

USING THIS STUDY GUIDE AS A PROTOTYPE, MODULES WILL BE DEVELOPED FOR THE HEALTH CARE PROBLEMS SEEN MOST OFTEN IN AMBULATORY CARE. THESE WILL COMPRISE MUCH OF THE FINAL CURRICULUM. THE VARYING LENGTHS AND DIFFERING EMPHASES WILL REFLECT THE UNIQUE NATURE OF EACH PROBLEM AND ITS MANAGEMENT.

IN THE DEVELOPMENT OF THESE MODULES (ESSENTIALLY A "PACKAGE" OF LEARNING EXPERIENCES, REFERENCE MATERIALS AND SELF-EVALUATIONS) CONTENT EXPERTS SERVE AS DIRECT RESOURCES. CONTENT EXPERTS ARE PRACTITIONERS, OTHER HEALTH PROFESSIONALS, CLINICIANS AND BASIC SCIENTISTS WHOSE EXPERIENCE WITH THESE PROBLEMS BECOMES INTEGRATED INTO THE MODULE. STUDENT CRITIQUES ARE ALSO USED IN THE DEVELOPMENT.

IN ORDER TO DEVELOP THIS STUDY GUIDE, THE TASKS NEEDED TO RECOGNIZE AND MANAGE PATIENTS WITH DIABETES WERE ANALYZED FOR THREE HEALTH PROFESSIONAL CATEGORIES; HEALTH CARE COORDINATOR, DENTIST, AND PHYSICIAN. NEXT, BASED ON THESE TASKS, PERFORMANCE OBJECTIVES WERE DESIGNED THAT REFLECT THE KNOWLEDGE AND SKILLS NECESSARY TO PERFORM THE TASKS. THESE PERFORMANCE OBJECTIVES PROVIDE A GUIDE ACCORDING TO WHICH THE STUDENT'S COMPETENCE CAN BE EVALUATED. THEY ARE RELATED TO THE APPROPRIATE SECTIONS WITHIN THE STUDY GUIDE AND BOTH THE PERFORMANCE OBJECTIVES AND TASKS ARE LISTED AT THE BEGINNING OF THE GUIDE.

TO FURTHER EXPLAIN THE STUDY GUIDE THERE IS BRACKETED MATERIAL THAT IS DESCRIPTIVE AND ADDRESSED TO THE IMMEDIATE READER; THE MAJOR PORTIONS ARE ADDRESSED TO THE STUDENT. ASSUMPTIONS ARE MADE THAT ALL THE MATERIALS AND APPARATUS MENTIONED WILL BE AVAILABLE TO THE STUDENT.

IT IS IMPORTANT TO REMEMBER THAT THIS STUDY GUIDE SERVES ONLY AS A GUIDE TO THE MODULE. TO COMPLETE THE MODULE THE STUDENT MUST DEMONSTRATE COMPETENCE IN THE RELATED PERFORMANCE OBJECTIVES. THIS NECESSITATES COMPLETING THE LEARNING EXPERIENCES AND SELF-EVALUATIONS AND READING OR REVIEWING (DEPENDING ON THE STUDENT'S PRIOR COMPETENCIES) THE REFERENCES.

TABLE OF CONTENTS

	PAGE	M.D.	D.D.S	H.
i. Pre Requisites		●	●	●
ii Tasks and Performance Objectives		●	●	●
1.0 Primer on Diabetes Mellitus	1	●	●	●
2.0 Patient Presentation	7	●	●	●
3.0 Recognition and Diagnosis of Diabetes - History, Physical Examination and Laboratory	11	●	●	●
3.1 Introduction	11	●	●	●
3.2 Gathering the Data Base	13	●	●	●
3.21 Entry and Information Gathering	13			●
3.22 Signs and Symptoms of Diabetes	13	●	●	
3.3 Laboratory Tests	16	●	●	●
3.4 Review of Patient Presentation	18	●	●	●
4.0 Basic Sciences Underlying the Understanding of Diabetes	19	●	●	●
4.1 Introduction	19	●	●	●
4.2 Overview	19			●
4.3 Detailed References	20	●	●	
5.0 Management	26	●	●	●
5.1 Introduction	26	●	●	●
5.2 Further Diagnostic Information	27	●		
5.21 Diabetic Complications	27	●		
5.22 Ketosis/Ketoacidosis	28	●		
5.3 Treatment Plan	29	●	●	●
5.31 Introduction	29	●	●	●
5.32 Management (M.D.)	31	●		
5.33 Management (D.D.S.)	31		●	
5.34 Management (H.C.C.)	32			●
5.4 Patient Education	33	●	●	●
5.5 Team Approach to the Management of Diabetic Patients	41	●	●	●
6.0 Monitoring Patient Progress	43	●	●	●
7.0 Early Detection	46	●	●	●
8.0 Assessing Outcomes	48	●	●	●
9.0 Other Illustrative Patients	50	●	●	●
10.0 Advanced Work	51	●	●	●
11.0 Post-Test	52	●	●	●

I. PRE-REQUISITES: (H.C.C., D.D.S. AND M.D.)

The following pre-requisites are recommended for students in the health care coordinator (H.C.C.), medical (M.D.), and dental (D.D.S.) pathways:

H.C.C. - General Procedures Module
M.D. - History, Physical Exam, and Interviewing Skills Modules
D.D.S. - History, Physical Exam, and Interviewing Skills Modules

Frequently the management of diabetes is closely associated with the management of two other health care problems: obesity and hypertension. It may be useful to complete the Hypertension and/or Obesity Modules prior, concurrent with, or subsequent to the Diabetes Module.

It is important to remember that no two individuals will have the same amount of knowledge about diabetes and its management when they begin the module. Furthermore, as students you will have varying amounts of background in the basic sciences necessary for understanding the pathophysiology of diabetes mellitus. Medical and dental students will be directed to read selected basic sciences references. If you are unable to understand these references, please consult your adviser who will identify additional reference materials to help you prepare for the module.

You will find a medical dictionary useful as you proceed through the module since many new terms are used and you may be unfamiliar with the terminology.

If you have had extensive experience in the diagnosis and management of diabetes mellitus, you may already be qualified in many of the competencies required for this module. If this is the case, review the objectives and tasks listed in Section II. and discuss them with your adviser. If your adviser agrees that you have acquired these competencies, he will provide you with the post test for the module.

II. TASKS AND PERFORMANCE OBJECTIVES

TASKS

I EARLY DETECTION

H.C.C. 1. Counsel and advise the following high risk patients with respect to symptoms of diabetes mellitus:
M.D.
D.D.S.

(1) Women who have delivered babies weighing more than 9 pounds or have had pregnancies involving abortions, premature labor, stillbirths, or neonatal deaths.
(2) Individuals who are obese.
(3) Individuals who themselves weighed more than 9 pounds at birth.
(4) Individuals with a family history of diabetes.
(5) Patients with transitory glycosuria or nondiagnostic hyperglycemia, especially during the course of pregnancy, surgical procedures, trauma, emotional stress, myocardial infarction, cerebrovascular accident, or administration of adrenal steroids.
(6) Patients with otherwise unexplained neuropathy, retinopathy, nephropathy, peripheral vascular disease, or coronary artery disease.

M.D. 2. Monitor the following high risk patients with respect to early detection of diabetes:

(1) Women who have delivered babies weighing more than 9 pounds or have had pregnancies involving abortions, premature labor, stillbirths, or neonatal deaths.
(2) Individuals who are obese.
(3) Individuals who themselves weighed more than 9 pounds at birth.
(4) Individuals with a family history of diabetes.
(5) Patients with transitory glycosuria or nondiagnostic hyperglycemia, especially during the course of pregnancy, surgical procedures, trauma, emotional stress, myocardial infarction, cerebrovascular accident, or administration of adrenal steroids.
(6) Patients with otherwise unexplained neuropathy, retinopathy, nephropathy, peripheral vascular disease, or coronary artery disease.

by ordering yearly tests for blood and urine sugars and recording results in chart.

D.D.S. 3. Monitor dental patients with respect to early detection of diabetes by performing urinalysis (uristix method), evaluating results and referring patient to physician when appropriate.

ENTRY:

History:

H.C.C. 4. Preparing chart for physician or practitioner with attention to diabetes mellitus by assisting patient in taking a predetermined social, family and/or medical history with specific reference to: Polyuria, polydipsia, polyphagia, fatigue, weight loss, visual disturbance, frequent and/or slow healing infections, paresthesias, family history, history of previous urinary or blood sugar, pruritus, pancreatitis, history of medications which can precipitate diabetes, obstetrical (babies heavier than 9 pounds and/or stillbirths), past history of vascular diseases, and recording by checking off or writing responses on forms or paper; give to practitioner.

M.D. 5. Taking medical, family or social history with special reference to: Polyuria,
D.D.S. polydipsia, xerostomia, glossopyria, polyphagia, fatigue, weight loss, visual disturbance, frequent and/or slow healing infections, paresthesias, family history, history of previous urinary or blood sugar, pruritus, pancreatitis, history of medications which can precipitate diabetes, obstetrical (babies greater than 9 pounds and/or still births), past history of vascular diseases.

M.D. 6. Taking medical, family or social history of any non-adult patient with special
D.D.S. reference to: Polyuria, polydipsia, polyphagia, fatigue, weight loss, visual disturbance, frequent or slow healing infections, paresthesias, family history and history of previous urinary or blood sugar.

Physical Examination:

M.D. 7. Examine patient with specific reference to: Weight, eye grounds, neurological (deep tendon reflexes, vibratory sense or sensory changes, cranial nerves), character of pulses (arterial), skin changes (necrobiosis, xanthoma), visual acuity, extremities (especially feet) and cardiovascular system.

D.D.S. 8. Perform oral examination with specific reference to xerostomia, acetone breath, glossopyrosia, oral lichen planus and advanced periodontal disease.

Lab:

H.C.C. 9. Obtaining a specimen of urine, by explaining to patient and/or family how to provide and/or preparing specimen for laboratory use re: covering, labeling with identification information and if necessary, arranging for delivery to laboratory with requisition slip.

H.C.C. 10. Testing a urine specimen obtained from any patient for items such as glucose, protein, blood, ketones, by use of a tablet, urine and water in test tube, for sugar, or tablet and urine for acetone, or by use of dipstick; comparing color results with color on chart; recording results, based on chart comparison, on patient's chart.

H.C.C. 11. Explaining to any patient who has not followed proper prior procedures required for special blood tests and urinalysis, what he must do the next time he has the appointment for the blood tests and urinalysis.

D.D.S. 12. Drawing blood from any patient's vein and filling test tubes or vacutainers with
M.D. appropriate blood samples; labeling or having labeled and/or brought to lab;
H.C.C. arranging to have co-worker obtain sample from hard to find vein if necessary; recording on results on patient's chart.

M.D. 13. Setting up an intravenous apparatus for any non-child patient by preparing bottle(s) of prescribed solution, inserting the IV needle into patient's vein and regulating the flow; instructing in how to regulate flow, change bottles and remove apparatus; recording on chart.

D.D.S. 14. Evaluate glucose tolerance curves for status of diabetes.

D.D.S. 15. Determine need for fasting blood sugar and glucose tolerance test based on presence or absence of: 1) premature advanced periodontal disease, 2) oral lichen planus 3) delayed wound or extraction site healing.

DIAGNOSIS

M.D. 16. Diagnosing any non-pediatric patient for the presence of diabetes on the basis of interpretation of preceding historical information, lab findings (including urinary glucose and/or ketones, abnormal blood sugar, or abnormal GTT) and associated physical findings. Note presence or absence of:

a) diabetic nephropathy
b) peripheral neuritis
c) eye complications
d) arteriosclerosis
e) infections (pulmonary tuberculosis, pneumonia, boils, carbuncles, gangrene of extremities).

Record assessment and formulate problems.

M.D. 17. Diagnosing any non-adult patient for the presence or absence of (juvenile) diabetes on the basis of interpretation of the preceding historical information, lab findings, (including urinary glucose and/or ketones, abnormal blood sugar, or abnormal GTT) and associated physical findings. Note presence or absence of:

a) diabetic nephropathy
b) peripheral neuritis
c) eye complications
d) infections (pulmonary tuberculosis, pneumonia, boils, carbuncles, gangrene of extremities).

D.D.S.18. Obtain biopsy and culture on patient with maxillary pain and oral antral communication and if diagnosed as mucormycosis provide screening for diabetes.

D.D.S.19. Prescribe appropriate treatment for patient with thrush and depending on results of treatment, screen for diabetes.

FORMULATE MANAGEMENT PLAN

M.D. 20. Determine whether hospitalization is indicated for the new diabetic by reviewing any acute complications, e.g., evaluate presence of significant ketoacidosis or other factors such as infection or emotional impact of having diabetes. Discuss diagnosis of diabetes with patient and family and decision for or against hospitalization.

M.D. 21. Evaluate patient's eating and living habits, his working conditions, and finally his emotional stability before instituting any diabetic regime.

M.D. 22. Determine whether consultation with diabetic specialist is indicated on basis of patient being severe juvenile or brittle diabetic and/or has other medical or surgical problems such as pregnancy, trauma, uremia, elective surgery, acidosis, coma.

M.D. 23. Determine appropriate insulin therapy or oral diabetic therapy and diet.

M.D. 24. Determine frequency of follow-up visits for stable diabetic patient based on severity of his disease and his skill as a self-care agent.

M.D. 25. Determine minimum frequency of urine sugar tests by diabetic patient based on type of treatment and severity of condition.

D.D.S.26. Formulate dental treatment for juvenile diabetic program with special reference to 1) complications from oral infections and surgical procedures and, 2) antibiotic coverage.

MANAGEMENT PLAN

M.D. 27. Convey to and instruct the diabetic patient and appropriate members of his family on the following:
  1) the importance of the patient-family roles in the medical management of diabetes, e.g. with relation to the diet modification, shopping for food, familial acceptance, etc.
  2) the basic concepts of diabetes and its control;
  3) principles of dietary management;
  4) urine testing: its importance and interpretation;
  5) acute complications;
  6) chronic complications;
  7) personal hygiene, (instruct diabetic patient on care of feet)
  8) influence and importance of exercise
  9) the importance of continuing care and education;
  10) medical identification tag, or card
  11) coma or insulin shock
  12) impact of disease on major life decisions.

Subtasks:

M.D. 28. Counsel any female diabetic patient of childbearing age with respect to pregnancy and usage of oral contraceptives.

M.D. 29. Providing any patient with special and chronic conditions and his family with counseling, reinforcement and instruction in daily living adaptations such as diet and medication procedures, ways to adapt home, what to do in emergency; arranging for special care or services, or follow-up; giving emotional support and reporting major problems to recording.

M.D. N.C.C. 30. Instructing any patient or an accompanying adult in how to perform test for sugar in urine with tablet or dipstick method and how to keep a record of results, by demonstrating and explaining; recording on patient's chart.

M.D. 31. Teaching a diabetic patient and members of household how to inject insulin according to Dr's orders, by showing how to prepare syringe, swab area with alcohol, choose site of injection, check to be sure needle is not in blood vessel (having patient practice on an orange) how to care for site of injection. Reassuring and dealing with anxiety (fears, concerns) of patient who is taking injections.

M.D. N.C.C. 32. Explaining the nature and purpose of a special diet (i.e. diabetic, obesity) to any patient and/or family or encouraging patient to continue to follow it and/or helping to come up with food substitutes in the diet of the patient that are compatible with prescribed diet; recording on patient's chart.

M.D. 33. Prepare a management regimen with attention to diet and medication for the geriatric patient in writing as well as orally and frequently review it with him and his family.

MONITORING

M.D. D.D.S. N.C.C. 34. Participating in staff meeting to discuss progress of patients in diabetes control program.

N.C.C. 35. Going over with any patient and reinforcing Dr.'s orders on diet, prohibited food, procedures for taking medication, home care, or return visit, emphasizing regulation of food intake using weight and maintenance of normal weight.

N.C.C. 36. Following up on a patient discharged from a hospital by checking on his intake of medication, appointments for care, deciding whether transportation is needed and providing for transportation; notifying Dr. of any special problem; recording on patient's chart.

M.D. D.D.S. 37. Diagnose and treat hypoglycemia (insulin reaction).

N.C.C. 38. Eliciting from patient reason for missing visit to performer, recording, planning personal follow-up with Family Health Worker, if considered necessary, or having secretary arrange new appointments if considered necessary.

M.D. 39. Deciding on whether to carry out a prescribed course of treatment for any non-child patient, and carrying out treatment by changing and/or approving renewal of prescriptions, by reviewing prescribed diet, insulin (and oral therapy), evaluating patient's level of diabetic control including urine tests and symptoms of hypoglycemia and hyperglycemia and recording.

M.D. 40. Monitor & evaluate diabetic patient regularly with respect to:
  1) diabetic nephropathy
  2) peripheral neuritis
  3) eye complications
  4) arteriosclerosis and
  5) infections
  6) diabetic control (urine sugar and ketones, blood sugar, and weight).

N.C.C. 41. Reporting to physician on relevant observed changes in patient's behavior, appearance, or discomfort reported by patient by being aware of relevant symptoms; encouraging patient to report discomfort; reporting to physician.

D.D.S. 42. Evaluate results of urinalysis of diabetic patient and notify physician when appropriate.

PERFORMANCE OBJECTIVES

	#	EARLY DETECTION	Related to Task(s) #
M.D.	1	Given 10 real or simulated patients selected from the high risk patients below, the student should be able to counsel and advise the following high risk patients about the signs and symptoms of diabetes mellitus by discussing how the patient can recognize the symptoms of diabetes, why early detection is beneficial, by informing the patient of the conditions and diseases that are associated with diabetes, by providing the patient with additional written information as desired, and by eliciting any questions and/or concerns the patient may have in __% of instances. 1) Women who have delivered babies weighing more than 9 pounds or have had pregnancies involving abortions, premature labor, stillbirths, or neonatal deaths. 2) Individuals who are obese. 3) Individuals with a family history of diabetes. 4) Individuals who were themselves babies who weighed more than 9 pounds. 5) Patients with transitory glycosuria or nondiagnostic hyperglycemia, especially during the course of pregnancy, surgical procedures, trauma, emotional stress, myocardial infarction, cerebrovascular accident, or administration of adrenal steroids. 6) Patients with otherwise unexplained neuropathy, retinopathy, nephropathy, peripheral vascular disease, or coronary artery disease.	1
M.D.	2.	Given 10 real or simulated patients selected from the high risk patients below, the student should monitor these patients for early detection of diabetes by ordering yearly tests for blood and urine sugars (dip stick method), evaluating results, noting significant changes from previous tests, recording in chart in __% of instances. 1) Women who have delivered babies weighing more than 9 pounds or have had pregnancies involving abortions, premature labor, stillbirths, or neonatal deaths. 2) Individuals who are obese. 3) Individuals with a family history of diabetes. 4) Individuals who were themselves babies who weighed more than 9 pounds. 5) Patients with transitory glycosuria or nondiagnostic hyperglycemia, especially during the course of pregnancy, surgical procedures, trauma, emotional stress, myocardial infarction, cerebrovascular accident, or administration of adrenal steroids. 6) Patients with otherwise unexplained neuropathy, retinopathy, nephropathy, peripheral vascular disease, or coronary artery disease.	2
D.D.S.	3.	Given a population of 30 dental patients the student will be able to accurately evaluate urinary glucose and ketone bodies using uristix in __% of instances and make a judgment for when referal is indicated in __% of instances.	3

ENTRY:

	#	History:	Related to Task(s) #
R.C.C.	4	Given 10 real or simulated diabetic patients the student should be able to assist the patient in taking a pre-determined social, family and medical history, should be familiar with the vocabulary used in the questionnaire and able to accurately explain words to the patient, should include the results in the patient's chart, and should flag any "positive" findings with respect to diabetes in __% of instances.	4
M.D. D.D.S.	5	Given a variety of real or simulated patients, when taking a medical family, and social history and/or review of systems the student will discern the presence or absence of historical information, symptoms suggestive of diabetes mellitus including polyuria,polydipsia, polyphagia, fatigue, weight loss, visual disturbances, frequent and/or slow healing infections, paresthesias, family history of diabetes, history of previous urinary or blood sugar abnormalities, pruritus, pancreatitis, history of taking medications which can precipitate diabetes, obstetrical history suggestive of diabetes (babies heavier than 9 pounds or stillbirths), in __% of instances. The student while not needing to ask all about all of these items on each patient should elicit and record a minimal standard historical data base, should be appropriately sensitive in his questioning so as to cover these areas and to follow-up on any clues that are provided. Further, if one or more symptoms are suggestive of diabetes, he should ask sufficient further questions to determine whether to pursue possible diagnosis further in __% of instances	5
M.D. D.D.S.	6	Given a variety of real or simulated non-adult patients, when taking a medical, family,and social history and/or review of systems the student will discern the presence or absence of historical information, symptoms suggestive of diabetes mellitus including polyuria, polydipsia, polyphagia, fatigue, weight loss, visual disturbances, frequent and/or slow healing infections, paresthesias, family history of diabetes history of previous urinary or blood sugar abnormalties in __% of instances. The student while not needing to ask all about all of these items on each patient should elicit and record a minimal standard historical data base, should be appropriately sensitive in his questioning so as to cover these areas and to follow-up on any clues that are provided. Further, if one or more symptoms are suggestive of diabetes, he should ask sufficient further questions to determine whether to pursue possible diagnosis further in __% of instances.	6
D.D.S.	7	Given 10 dental patients (5 diabetic and 5 non-diabetic) with a data base including oral examination and medical history the student will be able to recognize clues which suggest diabetes. The clues include: xerostomia and thirst, acetone breath, glossopyria, oral lichen planus, advanced periodontal disease, delayed wound healing or cutaneous ulcers, hypertension, obesity, women with birth complications, family history of diabetes, history of angina, polyuria, polydipsia, neuropathy in __% of instances.	5,6,9

**Physical Examination:** **Related to Task(s) #**

M.D. 8 Given five diabetic patients, the student should be able to examine the eye grounds, the neurological system, the cardiovascular system, the extremities and the skin and recognize gross diabetic retinopathy, grossly abnormal deep tendon reflexes or abnormal vibratory or other sensory changes, grossly abnormal cranial nerve function, grossly abnormal character of pulses and grossly abnormal skin changes, he should also be able to determine the visual acuity in __% of instances. 7

Lab:

H.C.C. 9 Given 10 real or simulated patients (of different ages and sexes) the student should be able to obtain a urine specimen by explaining the procedure to the patient and/or family, should be able to prepare a specimen for laboratory use by completely covering and identifying and labeling the specimen and, if necessary, should arrange for delivery to the lab by being familiar with laboratory delivery procedures, (e.g. "pick-up" times, testing schedules) in __% of instances. 9

H.C.C. 10. Given 10 urine specimens the student should be able to accurately test the urine for glucose, protein, blood, ketones, by using the appropriate test method, i.e. tablet or dipstick, by comparing the color results and the results on chart, determining the results based on chart comparison and accurately recording the results in the patient's chart. The student should be within + 1 degree of the accurate results using the tablet method in __% of instances and should accurately determine the results in 100% of instances using the dipstick method. 10

H.C.C. 11. Given 10 patients (of varying ages and sexes) the student should be able to accurately explain the procedures required for special blood tests (e.g. GTT, FBS) and urinalysis to patients and evaluate the patient's understanding of the procedures by eliciting any questions the patient may have concerning procedures in __% of instances. 11

M.D.
H.C.C.
D.D.S. 12. Given five patients of varying ages who require vein puncture, the student will be able to draw an adequate sample utilizing sterile procedure, remove the needle with no hematoma formation, adequately instruct patient in immediate post-puncture care. In no more than one out of five patients will the student require more than one skin puncture. 12

M.D. 13. Given three patients requiring an intravenous infusion, the student will be able to appropriately cleanse area of puncture, choose the proper IV needle, make preparations necessary before inserting needle to the bottle and tubing, palpate and select vein, insert the IV needle into the patient's vein, ascertain that fluid is flowing into the vein with no hematoma formation, tape the needle in position and regulate the flow within 5 drops/minute. The student should be able to successfully accomplish this on the first insertion on four out of five patients. 13

Related to Task(s) #

D.D.S. 14. Given 15 glucose tolerance curves, the student will be able to discriminate between non-diabetic, pre-diabetic, and diabetic states to 80% accuracy. 14

D.D.S. 15. Given 10 patients or hypothetical patients illustrated on photographs the student will be able to determine which patients have: 1) premature advanced periodontal disease, 2) oral lichen planus, 3) delayed wound or extraction site healing, and the student will be able to associate these conditions with the need for obtained fasting blood glucose and subsequently glucose tolerance testing in 100% of the cases. 15

DIAGNOSIS

M.D. 16. Given ten simulated patients or patient data bases (with and without symptoms and signs of diabetes) including historical information, physical findings and laboratory results (including urinary glucose and ketones, abnormal blood sugar or abnormal glucose tolerance test), the student will 1) interpret or assess these data, 2) record the assessment and 3) formulate the problem or problems based on data, 4) if diabetes present, include in the problem formulation a description of the general type of diabetes (e.g. stable, labile, ketosis prone, non-ketosis prone, adult on-set, juvenile on-set, etc.), 5) note presence or absence of diabetic nephropathy, peripheral neuritis, eye complications, arteriosclerosis and/or infections, (e.g. skin infections, ischemia of extremities, etc.) and 6) if data needed for diagnosis are not included, a specific plan to acquire these should be formulated in __% of instances. 16 & 17

D.D.S. 17. Given a patient with maxillary pain and oral-antral communication the student will obtain biopsy and culture. Given this same patient with a diagnosis of mucormycosis, the student will provide screening for diabetes. 18

18. Given a patient with thrush, the student will prescribe mystatin oral suspension. Given this same patient who is refractory to mystatin, the student will procede by screening for diabetes in __% of instances. 19

FORMULATE MANAGEMENT PLAN

M.D. 19. Given 3 simulated patient problems including data base and visual representation of patient as necessary (video tape, slides, etc.) the student will determine whether hospitalization is indicated for the new diabetic by evaluating presence of significant ketoacidosis or other factors such as the emotional impact of having diabetes. In addition, in a simulated interview, he will be able to explain to the patient the implications of his disease and the need for hospitalization and deal effectively with the emotional impact of the diagnosis of the patient and his family (e.g. by encouraging patient to express his feelings, ask questions, answer questions posed by family, etc.) in __% of instances. 20

M.D. 20 Given five simulated patient problems or case histories, formulate plan of management that will include: 21,22, 23,24 & 25

- a) evaluating patient's eating and living habits, his working conditions, and his psychological and emotional characteristics;
- b) determining appropriate diet;
- c) deciding if insulin or oral anti-diabetic agents are indicated and if so, appropriate type and dosage;
- d) determining frequency and schedule for patient's home urine sugar tests;

Related To
Task(s) #

e) determining frequency of routine follow-up visits;
f) determining frequency of periodic eye examinations by an opthalmologist; and
g) determining whether consultation with a diabetic specialist is indicated on the basis of severe labile or brittle diabetes or on the basis of other medical or surgical problems (e.g., pregnancy, trauma, surgery, etc.)
in __% of instances.

D.D.S. 21. Given a patient with juvenile diabetes the student will be able to verbalize 3 associations with respect to the microvascular defect present and 1) anticipate complications from oral infections and surgical procedures and 2) prescribe the use of antibiotic coverage in __% of instances. 26

[Possible associations to vascular defect: 1) retinopathy, 2) renal disease, 3) delayed healing related to oral vascular incompetancy during inflamation.]

MANAGEMENT PLAN

M.D. 22. Given 10 real or simulated diabetic patients (1 geriatric, 5 adult, 4 juvenile) the student will be able to convey to and instruct the diabetic patient and appropriate members of his family on the following: 27
- a) the importance of the patient-family roles in the medical management of diabetes (e.g. with relation to patient's diet modification, shopping-food, familial acceptance.)
- b) the basic concepts of diabetes and its control,
- c) principles of dietary management,
- d) urine testing, its importance and interpretation,
- e) acute complications, (coma or insulin shock),
- f) chronic complications,
- g) personal hygiene and care of the feet,
- h) influence and importance of exercise,
- i) the importance of continuing care and education,
- j) medical identification,
- k) impact of disease on major life decisions,

by being knowledgeable about the above listed subjects, being able to communicate this knowledge clearly, being able to elicit the patient's concerns and questions and being empathetic and reassuring when required in __% of instances.

Sub-objectives

M.D. 23. Given 5 real or simulated female diabetic patients, the student should be able to counsel any female diabetic patient of childbearing age with respect to pregnancy and usage of oral contraceptives by being knowledgeable about 1) complications associated with pregnancy in "diabetic" women and 2) contraindications of oral contraceptives for diabetic women, 3) alternative means of contraception and should be able to 1) communicate this knowledge accurately and 2) elicit any of the patient's concerns and questions regarding pregnancy and contraception in __% of instances. 28

M.D. 24. Given 10 real or simulated diabetic patients and their families or person(s) residing with the patient, the student should be able to counsel, reinforce and instruct the patient's family in daily living adaptations such as diet and medication (insulin or oral therapy) procedures, ways to adapt home, emergency care, ways to arrange for special care services, by eliciting their major concerns and being empathetic, supportive and reassuring in __% of instances. 29

Related To
Task(s) #

M.D.
M.C.C. 25. Given 2 simulated or real patients (who do not know how to test urine), the student should be able to explain how to perform test for sugar in the urine using tablet and dipstick method including how to interpret accurately the color and how to keep a record of results. After instruction, the patient should be able to perform on his own an accurate urine sugar test and accurately interpret the color range using simulated urines of known sugar concentration in __% of instances. 30

M.D. 26. Given 2 new insulin dependent diabetic patients, the student will be able to instruct patient in the procedures necessary to inject insulin in the manner that will reassure the patient and help patient deal with anxiety related to injection. The student will use appropriate audio-visual material and simulation devices, if necessary. After instruction and practice, the patient should be able first to perform appropriately an injection by himself with the student present and helping and finally, on his own with the student observing in__% of instances. 31

M.D.
M.C.C. 27. Given 10 diabetic patients, the student should be able to instruct the patient in the purpose and nature of a special diet and should be able to assist the patient in chosing appropriate food substitutes (ethnic, vegetarian, personal preference, etc.) and assist patient in understanding details and implications (e.g. managing special [e.g. work])situations, time of meals, etc.) of special diet in __% of instances. 32

M.D. 28 Given 5 real or simulated diabetic geriatric patients the student should be able to prepare a management regimen (diet and medication) in writing as well as orally and review the regimen with the patient and family frequently to determine if the patient and family understands the regimen by eliciting any questions or concerns in__% of instances. 33

D.D.S. 29. Given 10 hypothetical or real patients known to be diabetic who collapses and becomes comatose, the student will 1) act accordingly in the emergency 2) be able to evaluate the nature of collapse (hypo versus hyperglycemic). in 100% of the instances. 37

MONITORING

M.D.
D.D.S.
M.C.C. 30. Given case histories of 10 diabetic patients of varying ages and sexes, the students will be able to contribute effectively to a staff discussion of each patient by communicating his thoughts and feelings openly; listening to thoughts and feelings of other staff; clarifying agenda and decision-making issues; supporting the crew and suggestions of other staff; and sharing leadership for such meetings with other staff in __% of instances. 34

M.C.C. 31. Given 8 real or simulated diabetic patients the student should be able to reinforce the Dr.'s orders in diet, medication procedures, home care or return visit and emphasize the regulation of food intake, losing weight and maintenance of normal weight by eliciting patients understanding of these procedures in __% of instances. 35

M.C.C. 32. Given at least 5 real or simulated diabetic patients, the student will elicit from the patient his understanding of the current medication, how he will be taking it, his next appointment, make a decision on whether transportation is needed and if so, arrange to provide it for the patient and notifying physician of any special problems and recording the above on the patient's chart. 36

Related To Task(s) #

33. Given 5 simulated patients with and without symptoms and signs of hypoglycemia the student will be able to differentiate those with probable hypoglycemia from those without and institute appropriate treatment. The student will also be able to explain to patient and family how to recognize symptoms in __% of instances. 37

34. Given 10 real or simulated diabetic patients of varying ages and sexes who have missed their appointments, the student should be able to communicate his concern for the patient and elicit from the patient his reason for missing the appointment, refer the patient to a social worker if necessary, reschedule the appointment and record in __% of instances. 38

35. Given past and current information on at least 5 patients the student will decide on whether to continue or modify the current course of treatment by reviewing the prescribed diet, insulin and/or oral therapy, evaluating patient's level of diabetic control (including urine tests and symptoms of hypoglycemia and hyperglycemia) and record plan in __% of instances. 39

36. Given at least 20 charts of diabetic patients, the student will be able to audit the charts with respect to: 40
    a) diabetic nephropathy;
    b) peripheral neuritis;
    c) eye complications;
    d) cardiovascular disease; and
    e) infections
    f) diabetic control (urine sugar ketones, blood sugar and weight)

    and determine whether areas have been adequately monitored by the physician. If not, what needs to be done with respect to additional data and if so, whether further diagnostic or therapeutic steps are necessary and which ones in __% of instances.

37. Given 10 real or simulated diabetic patients, the student should report noted changes in patient's behavior, appearance and discomfort (reported by patient) to the physician and should encourage the patient to report discomfort to physician in __% of instances. 41

38. Given 10 known diabetics under treatment by their physician, the dental student will be able to obtain uristix evaluation at dental recalls and notify physician during these interim visits when lack of control is realized in ____% of instances. 42

1.0 PRIMER ON DIABETES MELLITUS* (M.C.C., D.D.S., M.D.)

The Primer on Diabetes Mellitus serves as an introduction to the Study Guide. It provides an overview and it summarizes the detailed sections of the guide relating to the diagnosis, management and monitoring of diabetes.

> [The Primer is presented at the beginning of the Study Guide so that all students can have a general understanding of diabetes before they proceed. For some students the Primer will be their first "contact" with diabetes. For others, it may be a review or clarification of knowledge they already possess.]

I. Introduction

"Diabetes mellitus is an incurable but controllable disease which affects approximately five million Americans. The disease presents a broad spectrum of clinical problems, most of which fall into one or more categories when the individual patient is considered: (1) recognition of the disease, (2) application of effective therapeutic methods to assure optimal long-term metabolic control, (3) treatment of acute complications, and (4) treatment of chronic complications."1.

Diabetes is a metabolic disease. Metabolism simply stated is the biological conversion of one thing into another. Examples include the conversion of sugar into energy, of calcium into bone, of proteins into muscle, and of excess food into fat. All of these are metabolic processes necessary for continuous activity, growth and development. The body's ongoing need for energy is met by maintaining a constant amount of nutrients and materials in the blood stream for supply to all parts of the body.

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* The primer is adapted from two sources:

1. Davidson, J.K., "Contemporary Concepts of Diabetes Mellitus and Its Treatment" in Syllabus, Sixth Allied Health Postgraduate course in Diabetes, Emory University School of Medicine, Atlanta, Georgia, April, 1974.

2. Boper, M.R., Knight, C.C. and Bystman, S.F., "Diabetes Mellitus" in Guidelines for Chronic Care, Project Amos Chronic Care Program, DeWitt Army Hospital, Fort Belvoir Virginia, June, 1973, pp 85-87.

The digestive system breaks down food into its simplest elements which are then absorbed into the blood stream and used by the body for energy and repair. Excess nutrients are combined and stored in the body tissues. Between meals, these stores are broken down into simple elements and released into the blood. In effect, the body "digests" its stored food during fasting very much like it digests eaten food during a meal.

The key to this, as in all metabolic processes, is proper control. Insulin is one means of regulating the process.

Insulin is a hormone, that is, a substance released into the blood stream and carried to various parts of the body where it produces certain effects. Insulin is produced in the pancreas. It is released into the blood stream when the level of certain nutrients in the blood becomes high (such as after eating). The presence of insulin enables the body to use these nutrients and to store the excess. During fasting, the level of nutrients in the blood is low and so insulin is no longer released. Without insulin, the body begins to breakdown its stored material to maintain a constant amount of nutrients in the blood.

In the normal person, the pancreas releases the needed amount of insulin in response to the amount of nutrients absorbed after a meal. In the diabetic, the release of insulin is limited. This requires the diabetic to do consciously what his pancreas can no longer do automatically.

Most diabetics still have enough insulin to allow the proper metabolism of small well-balanced meals. In this case, the diabetic would only have to control his eating so as to avoid a sudden large load of nutrients that would exceed his limited supply of insulin. In other instances, the diabetic needs to take an injection of insulin usually before breakfast, that acts over the course of the day. The action of the insulin approximately matches the timing of his meals.

The following restates much of the above in more specific terms:

"In the normal human, pancreatic beta cells adjust insulin production levels to the feeding-fasting cycle and to basal and exercise-induced substrate breakdown and energy expenditure. Thus, plasma glucose, fatty acid and amino acid levels are maintained in their normal ranges, and endogenous carbohydrates, fats and proteins are synthesized or degraded at precisely controlled rates. If the intake of calories is greater than the expenditure of calories, undegraded substrates are stored in energy reservoirs, primarily adipose tissue, and the body weight increases. As the body mass increases, the amount of insulin needed to maintain substrate metabolic homeostasis in both the feeding and fasting states increases. The beta cells produce more insulin and the beta cell mass may increase. The ability of these cells to adapt to metabolic stress is strictly limited, however. If they are excessively stressed by abnormal substrate intake and resultant obesity, beta cell decompensation occurs and insulin production becomes inadequate. Coincidentally, glucose intolerance develops, and as time passes the fasting plasma glucose level reaches higher and higher levels.

There is also an increased need for insulin during the growth spurt of pregnancy and puberty, and in the presence of excessive amounts of exogenously administered or endogenously produced hormones such as somatotrophin, adrenocorticotrophin, cortisol, ephinephrine, glucagon or thyroxin. Thus, obesity, pregnancy, puberty, acromegaly, Cushing's cyndrome, pheochromocytoma, glucagonoma, or hyperthyroidism may produce sufficient metabolic stress to precipitate beta cell decompensation and diabetes mellitus.

When the beta cell mass is reduced below a critical level by pancreatectomy, chronic pancreatitis, hemochromatosis, or beta cell destruction from any other cause, insulin production falls below the level necessary to maintain normal anabolic/catabolic balance and diabetes mellitus results. As catabolic products of carbohydrate, fat and protein flood the extracellular compartment due to the marked insulin deficiency, fatal diabetic ketocidosis or hyperosmolar coma will ensue unless exogenous insulin therapy restores the normal anabolic/catabolic balance.

When therapy is planned for an individual with diabetes mellitus, stress factors that produce beta cell decompensation should be treated aggressively, such as excessive body weight. If these measures fail to restore beta cell compensation because the remaining beta cell mass is not large enough to produce the amount of insulin needed to re-establish metabolic homeostasis, the endogenous insulin deficit must be corrected by administration of an appropriate amount of exogenous insulin."[1]

"There are many patients in whom the diagnosis of diabetes is made when in fact diabetes is not present. In different individuals this has resulted in anxiety; unwarranted restrictions in employability, driving automobiles and flying airplanes; uninsurability or access to "rated" insurance only; unnecessary restrictions related to diet therapy; and potentially hazardous treatment with oral agents or insulin."[1.]

II. Diagnosis

Before the diagnosis of diabetes mellitus is made, a sufficient amount of unequivocal data to confirm the diagnosis should be available.

If a person who is not known to have any diabetes shows any sugar in a routine urinalysis or has an abnormal random 2-5 hour "post cibum" or "after meals" blood sugar or an abnormal (greater than 5 hours p.c.) blood sugar the possibility of diabetes mellitus should be considered. This can be confirmed by finding a clearly abnormal three hour GTT (glucose tolerance test) or by finding three fasting venous plasma glucose levels above 150 mg./ml. These tests are discussed further in the sections that follow in the study guide.

Diabetes becomes manifest in the majority of patients when they are adults, most often when the patient is obese. As previously explained, an obese person has more "stress" on his carbohydrate metabolism, and is more likely to become "carbohydrate intolerant." Non-obese adults also develop diabetes, and may tend to develop explicit symptoms such as excessive urination (polyuria), excessive thirst (polydipsia), fatigue, and weight loss. The "juvenile-onset" diabetic, who is not likely to be obese, will almost certainly manifest some or all of the above typical symptoms. Obese, adult-onset diabetics comprise the majority of diabetic patients.

III. Management

Diabetes in each of the above three different types manifests itself differently, although in related ways. For example, the obese adult is not likely to require insulin, and his blood sugar, although elevated, is likely to remain relatively stable. The juvenile diabetic will require insulin, and his blood sugar levels are likely to be labile, with wide swings up above normal levels and down to below normal. It may be difficult to establish good control.

Management of diabetes varies with the individual and with his type of disease. The management of the majority of adult onset diabetics is based on diet therapy. Oral hypoglycemic agents have been used in the past and are still used today. However, these drugs are not a satisfactory substitute for diet therapy and weight reduction. Their use decreased in response to the controversial University Group Diabetes Project, a prospective double-blind study examining the variables affecting diabetic control and diabetic complications. Insulin therapy is used less frequently in the adult-onset diabetic and only if the diabetes cannot be controlled by diet therapy and weight reduction. Juvenile diabetics are always dependent on insulin therapy as well as diet regulation. All of these topics are covered in further detail in the sections to follow.

Regardless of the type of diabetes, proper eating habits are essential. In a sense, the diabetic must use self-control to substitute for his body's loss of automatic-control. There are two goals that should guide his eating habits.

1) "Maintenance of normal weight. The amount of insulin needed for proper metabolism increases with obesity. The diabetic has a limited amount of insulin and cannot afford to waste it on excess fat tissue. For an obese person, a weight reduction diet is necessary to lose this excess weight.

2) Regulation of food intake. This means that the diabetic needs to eat regular, well-balanced meals. Meals should not be excessive in calories or in any of the three major components: carbohydrates, fats and proteins. Many, probably a majority, of those diabetics whose disease begins in their adult life can keep it controlled by diet alone if sensible eating habits are developed and the two goals listed above are achieved."[2.]

"Control of diabetes in the ambulatory patient is generally assessed by urine tests for sugar, supplemented by occasional blood sugar determinations. An ideally controlled diabetic is one whose urine is always free of sugar and who never has an episode of hypoglycemia. Many stable adult-onset diabetics can achieve this degree of control.

The more severe or less stable diabetic may be difficult to control as precisely. The goal for this type of patient is to prevent acidosis and hypoglycemia, but to tolerate some degree of glycosuria if necessary. It is better to have episodes of asymptomatic glycosuria than to have episodes of hypoglycemia."[1]

As discussed previously, diabetes is incurable but controllable. Once the diagnosis is confirmed by the physician, the roles of health professionals are shifted to ones which assist the diabetic patient in maintaining control of his diabetes and monitoring his progress. Maintaining control of diabetes is primarily the responsibility of the patient. However, it takes the concerted efforts of the patient, his family and members of a health care team to develop a management program that will be effective. (Detailed discussion of the roles and responsibilities is found in subsequent sections of the study guide.)

2.0 PATIENT PRESENTATION (H.C.C., D.D.S., M.D.)

The roles and responsibilities described in the following presentation are not entirely consistent with the roles of today's health care practitioners. However, it is a reasonable contention that health care in the future will resemble what is described below and throughout the study guide.

Mrs. Doris Fine arrives at a group practice office located in a suburban community in northern California. She has recently moved to this area, and was referred to her new physician, Dr. Samuels, by a neighbor. Dr. Samuels is a family practitioner who is in a group practice with two other primary care physicians. The other members composing this office-based health care team are four (4) health care coordinators.

Mrs. Fine is a friendly, middle-aged woman who is here for a check-up at her dentist's recommendation. During Mrs. Fine's last dental appointment a routine screening urinalysis was performed, and the presence of glucose in the urine was noted.

As this is her first visit, Mrs. Fine completes an extensive questionnaire which serves as a standard data base. She is assisted by the health care coordinator (H.C.C.). The information given in Exhibit 1. has been abstracted from one section of the questionnaire.

The H.C.C. then directs Mrs. Fine to the examining room and gathers the following data:

HEIGHT: 163 cm. WEIGHT: 77 kg. BLOOD PRESSURE: 160/100

URINALYSIS (Dipstick Method): Glucose: Positive
Ketones: Negative
Protein: Negative

Noting a finding of "Positive" glucose in the urine, the H.C.C. does another urinalysis using the tablet (Clinitest) method with a result of 3+ glucose.

EXHIBIT 1.

NAME: Doris Fine DATE: 7-1-74

ADDRESS: 624 W 43rd Avenue TELEPHONE: 442-3672
San Leandro, Calif

BIRTHPLACE: Chicago BIRTHDATE: 6-20-18

OCCUPATION: Housewife AGE: 56

EDUCATION: High School Graduate REFERRED BY: Mrs Barbara Stevens

Please circle: Single [✓ Married] Divorced Widowed

NAME OF PERSON TO CONTACT IN CASE OF EMERGENCY: Mr. Frank Fine

ADDRESS: 624 W 43rd Avenue, San Leandro, Calif.

TELEPHONE: H- 442-3692 W- 941-3994

RELATION TO PATIENT: Husband

REASON FOR APPOINTMENT: Physical Checkup

Please circle if any members of your family have or had:

[✓ Diabetes]
Tuberculosis,
Cancer,
Stroke
Gout
High Blood Pressure
[✓ Kidney Disease]
Deafness
[✓ Arthritis or Joint Disease]
Anemia
Heart Disease

Please circle if you have or had:

Mumps
[✓ Measels]
[✓ Chickenpox]
Rheumatic Fever
Arthritis or Joint Disease
[✓ High blood pressure]
Rheumatism
Scarlet fever
Pneumonia
Tuberculosis
Cancer
Diabetes
Heart Disease
Kidney Disease
Jaundice

IMMUNIZATIONS: Small Pox TYPE DATE 1964

HOSPITALIZATIONS: None DATE REASON

CURRENT MEDICATIONS: None

ALLERGIES: None

DO YOU WEAR GLASSES: (Please circle) [✓ YES] NO CONTACT LENSES? YES [✓ NO]

REASON FOR GLASSES: far sighted DATE OF LAST EYE EXAMINATION: 2-73

DO YOU WEAR A HEARING AID: YES [✓ NO]

DO YOU SMOKE? [✓ YES] NO DID YOU EVER SMOKE? YES NO

HOW MANY CIGARETTES DO YOU SMOKE PER DAY? 10

DO YOU DRINK ALCOHOLIC BEVERAGES? (Beer, Wine, Liquor) [✓ YES] NO

HOW MUCH DO YOU DRINK PER DAY? Social Drinker - Weekends 1-2 Drinks

DATE OF LAST DENTAL EXAMINATION: 6-74

NAME OF YOUR DENTIST: Dr. Mathew Spinuzza

ADDRESS: 6232 Novicos Drive, San Leandro, Calif

Doris Fine is representative of the type of person who frequently becomes diabetic in adulthood. We will continue to follow Mrs. Fine during the management of her problem by members of a health care team and herself.

Like many other primary care problems, e.g., hypertension and obesity, the effective management of diabetes is far more difficult than diagnosing the problem. The presence of diabetes can have substantial detrimental effects on the health status of a patient. Specifically, the disease can affect the cardiovascular system, the nervous system, the visual and the renal system.

The effective management of diabetes requires the cooperation of multiple health professionals. Therefore, the knowledge skills and patient care responsibilities of the health care coordinator, dental and medical student are interwoven throughout the module. The emphasis from an instructional point of view is on the knowledge and skills that are most likely to affect patient outcome - for the diabetic patient this means the planning, management, and monitoring of the problem, and achieving acceptable control of the diabetes.

[By using the format of following one patient throughout the study guide, it is hoped that the student will gain insight into the problems encountered by a newly diagnosed diabetic person and his family. The student's association with a 'simulated' patient and the effect of his decision making on the patient's outcome should provide increased impetus to learn the pathophysiology of diabetes and the knowledge and skills needed to diagnose, manage and monitor an adult diabetic patient]

SELF-EVALUATION

H.C.C., D.D.S. and M.D. -

Review the data abstracted from Mrs. Fine's questionnaire and the additional data obtained by the H.C.C.

1) List any information you feel may be atypical or abnormal.
2) Based on what you have learned in other modules (e.g., prerequisite modules), formulate an initial problem list at your level of understanding.

SELF-EVALUATION (con't)

Compare your answers with those found in the booklet accompanying this study guide. If you have any questions about your answers, consult with your adviser.

> [The completed module will have an answer booklet accompanying it. This answer booklet will be referred to throughout this study guide. It is not available as of this publication.]

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After reviewing the data and questionnaire, Dr. Samuels introduces himself to Mrs. Fine. She responds by telling him her dentist suggested she have an examination, and she asks if her latest urine test showed any sugar in the urine. Dr. Samuels informs her of the results of the urinalysis, explaining what a "positive" sugar may indicate. He also explains that more information is needed before any diagnosis can be made. After reassuring Mrs. Fine, he begins to review some of the information on the questionnaire with her, becoming further acquainted and questioning her about other symptoms associated with diabetes.

The following information was selected from the standard data base collected by the N.C.C. and the conversation described above:

Mrs. Fine recently moved to this area to be near her 2 daughters and grandchildren. One of these daughters weighed 10 lbs. at birth.

She has had an excessive weight problem for the last 10 years. She was always overweight, but began to gain weight more rapidly after her youngest child left home. She has been on reducing diets but none have been successful. She hasn't gained any more weight over the last 6 months.

She has had high blood pressure on and off over the past 10 years, and she believes her weight fluctuations affect it. She has never taken any medication for it.

She wears glasses when she reads and hasn't noticed any change in her vison.

She has had no infections, vaginal itching, nor any tingling or numbing of her fingers, hands or feet.

She does not have nocturia, polydipsia, polyphagia or polyuria.

Her great aunt had diabetes and received insulin therapy and Mrs. Fine thinks two uncles became diabetic when they were 50 plus years old.

SELF-EVALUATION

N.C.C., D.D.S. and M.D. -

Review the preceding information about Mrs. Fine and, based on this additional information, add, clarify or delete problems on your initial problem list.

Check your answers with those in the self-evaluation answer booklet. If you have omitted any problems from your list or added ones not given in the answer booklet consult with your adviser.

Further information is needed to confirm a diagnosis of diabetes mellitus and to design a management plan for an adult like Mrs. Fine. The next section will return your attention to the patient and her problem for an in-depth look at the history, physical and laboratory findings pertinent in diagnosing diabetes mellitus.

3.0 - RECOGNITION AND DIAGNOSIS OF DIABETES - HISTORY, PHYSICAL EXAMINATION AND LABORATORY

The following performance objectives are related to Section 3.0. You may find it useful to review these objectives before reading the section.

RELATED PERFORMANCE OBJECTIVES:

#3,4,5,6,7,8,9,10,11,12,14,15,16

3.1 - Introduction: (N.C.C., D.D.S. and M.D.)

Diagnosis of diabetes mellitus is primarily made on the basis of laboratory data. However, there are several associated signs and symptoms (explained below) that, if present, can help you recognize the presence of diabetes. Even before these typical symptoms may be present, evidence may exist that the natural history of the diabetes has begun to involve the vascular system, causing the so-called "complications" of diabetes; for example, vascular changes in the kidneys producing renal disease, vascular changes in the retina producing visual problems and changes in the vessels around the peripheral nerves producing peripheral nephropathy.

Although diabetes is usually recognised by the presence of certain signs, symptoms, or abnormal laboratory tests, the definitive diagnosis is made based on the actual stage of the diabetes. Diabetes is often classified into arbitrary stages based on the presence or absence of abnormalities of carbohydrate metabolism In order to relate the signs, symptoms, and abnormal findings to the diagnosis of diabetes, it is necessary for you to be aware of how the stages of diabetes are classified. One common way of classifying diabetes is according to the following four stages:

1.) overt diabetes
2.) latent diabetes
3.) subclinical diabetes
4.) pre-diabetes

Overt diabetes is the most advanced of these stages. The patient may or may not have symptoms referable to diabetes, including the "classical" symptoms such as excessive urination (polyuria), excessive thirst (polydipsia), fatigue, excessive hunger (polyphagia), and weight loss. The diagnosis is made on the basis of high blood sugar levels in the fasting state and sugar in the urine. A glucose tolerance test is not necessary for diagnosis.

In latent diabetes the patient has no symptoms or signs referable to diabetes. A definite diagnosis can be made if there is an elevated fasting blood sugar level, a definitely abnormal glucose tolerance test or a definitely abnormal blood sugar following a standard dose of glucose. This stage is also known as "chemical diabetes." Most patients are diagnosed as having either overt or latent diabetes.

In subclinical diabetes the fasting blood sugar level and also the glucose tolerance test are normal under the usual circumstances. However, under certain conditions of stress (e.g., during pregnancy) the patient would demonstrate an abnormal glucose tolerance.

The earliest stage, pre-diabetes, exists before there is any identifiable evidence of diabetes. The pre-diabetic stage covers the time from conception until the demonstration of impaired glucose tolerance in an individual predisposed to diabetes on genetic grounds. Women who had babies weighing more than 9 lbs. at birth and people who themselves weighed more than 9 lbs. at birth also have a greater predisposition to diabetes.

Read the reference below for a brief discussion and further explanation of these stages.

REFERENCE:
(D.D.S. and M.D.)

Fajans, S.S.: Classification and
History of Genetic Diabetes Mellitus
in Diabetes Mellitus: Diagnosis and
Treatment, Vol. III, Fajans and
Sussman, eds, New York: American
Diabetes Association, 1971, pp 89-93.

SELF-EVALUATION

H.C.C., D.D.S. and M.D. -

1) How would you classify the kind of diabetes that Mrs. Fine has?

D.D.S. and M.D. -

2) Classify each of the patients described in the following five case histories according to the stage of their diabetes: [Five short case histories with relevant standard data base information are presented.]

Check your answers with those found in the accompanying answer booklet. Discuss any problems with your adviser.

3.2 Gathering The Data Base

3.21 - Entry and Information Gathering (H.C.C.)

Your role is to gather certain portions of the standard data base as described in the General Procedures Module and to flag any abnormal information for the attention of the physician. This particular study guide will focus on flagging those signs, symptoms, and abnormal routine laboratory tests that suggest the diagnosis of diabetes mellitus.

For discussion of the signs and symptoms of diabetes read the following reference:

REFERENCE:

Boyd, W.: An Introduction to the
Study of Disease, Philadelphia:
Lee and Febiger, 1971, 6th edition,
pp 367-370.

Review the standard data base that you learned in the General Procedures Module and identify those items which would relate to or suggest the possibility of diabetes mellitus.

3.22 - Signs and Symptoms of Diabetes (D.D.S. and M.D.)

For the physician and dentist, signs and symptoms suggestive of diabetes will provide clues to undiagnosed diabetes as well as evidence of the level of diabetes control of a diagnosed diabetic. They also provide evidence of diabetic complications, which may be present in an otherwise undiagnosed diabetic. The elicitation and recognition of the signs and symptoms, and other historical features have already been covered in the modules on history taking and physical diagnosis. They are listed below along with suggested references, in which the relationship of these factors to diabetes is discussed.

Classical Signs and Symptoms

1) polyuria
2) polydipsia
3) dry mouth
4) polyphagia
5) fatigue
6) weight loss
7) acetone breath
8) refractive vision changes
9) vaginal itching

Predisposing Factors

1) family history of diabetes
2) obstetrical history suggestive of diabetes
3) obesity
4) history of taking medications that can precipitate diabetes (e.g., oral contraceptives, steroids)

Signs and Symptoms Suggestive of Diabetic Complications

1) visual disturbances
2) frequent and/or slow healing infections or delayed wound healing
3) paresthesias
4) glossopyria
5) oral lichen planus
6) skin lesions
7) xanthomata
8) evidence of inadequate peripheral circulation
9) diabetic retinopathy
10) absent deep tendon reflexes
11) absent vibratory sense
12) absent peripheral pulses
13) advanced peridontal disease

REFERENCES:	
(D.D.S. and M.D.)	Danowski, T.S.: Clinical Manifestations of Newborns, Older Infants and Children, in Diabetes Mellitus: Diagnosis and Treatment, Vol. I. Danowski, T.S. ed, New York: American Diabetes Association, 1964, pp 19-22.
(D.D.S. and M.D.)	Colwell , A.R.: Clinical Manifestations in Adult in Diabetes Mellitus: Diagnosis and Treatment, Vol. I. op cit., pp 23-26.
(D.D.S. and M.D.)	Goldner, M.G.,: "General Principles to be Considered in the Diagnosis of Diabetes Mellitus," in Diabetes Mellitus: Diagnosis and Treatment, Vol. II, Hamwi and Danowski, eds., New York, American Diabetes Association, 1967, pp 39-42.
(D.D.S. and M.D.)	Consequences of Insulin Deprivation, in CIBA Collection of Medical Illustrations, Vol. IV, Endocrine System, New York: CIBA, 1965, pp 160-161.
(D.D.S. and M.D.)	"Retinopathy, Intercapillary Glomerulosclerosis, Diabetic Nephropathy and Necrotising Papillitis, Diabetic Neuropathy, Atherosclerosis in Diabetes, and Vascular Insufficiency in Diabetes, "In CIBA Collection of Medical Illustrations, Vol. IV, op cit., pp 164-170.
(D.D.S.)	Mohnicke, G. and Ulrich, K.H.: Diseases of the Teeth and Their Supporting Tissues in Diabetic Patients. Dent. Abst. 2: 629, 1957.
(D.D.S.)	Hirschfeld, I.: Periodontal Symptoms Associated with Diabetics. J. Periodont. 5: 37, 1934.
(D.D.S.)	Mitchell, D.F., Standish, S.M., and Fast, T.B.: Oral Diagnosis/Oral Medicine, Lea & Febiger, 1971, 2nd ed., pp 45-46; 206-208.

SELF-EVALUATION

M.D. -

Arrange to see in the Clinical Unit two to three adult diabetic patients who have some evidence of diabetic complications. Take a history to determine what signs and symptoms or historical data were present when the disease was first diagnosed and examine the patients to determine which complications are present. Verify your findings with the instructor in the clinical unit and by reviewing the chart.

D.D.S. -

Perform as above with respect to history, but do only an oral examination. Verify your findings with the instructor in the clinical unit and by reviewing the chart.

3.3 - Laboratory Tests (H.C.C., D.D.S. and M.D.)

The definitive diagnosis of diabetes mellitus is made by means of laboratory tests. These include the following: urinary glucose and ketone bodies, fasting blood sugar, 2 hour post prandial blood sugar and various glucose tolerance tests, primarily the oral glucose tolerance test. Each of these has advantages and disadvantages and different indications, depending upon the patient. There is controversy over which tests are best for which particular type of patient as well as over the interpretation of results. These tests and their indications are discussed in the references listed below.

The health care coordinator will be responsible for instructing the patient in certain procedures to carry out at home (e.g., time and method of urine collections, need to fast), explaining the steps involved (e.g., in the glucose tolerance test), and collecting, labeling (and in some instances, testing) particular specimens. The details are described on the patient instruction and procedure sheets referenced below.

REFERENCES:

(H.C.C., M.D. and D.D.S.) Tests for Diabetes and Pre-diabetes in CIBA, Vol. IV, Endocrine System, op. cit. p 171.

Crampton, J.H.; Urine Testing and Post Prandial Blood Glucose in Diabetes Mellitus: Diagnosis and Treatment, Vol. I, op. cit. pp 27-30.

Seltzer, H.S.; Oral Glucose Tolerance Test in Diabetes Mellitus: Diagnosis and Treatment, Vol. III, op. cit., pp 101-106.

Patient Instruction and Procedure Sheets on Urine Collection, Blood Sugar, Glucose Tolerance Tests (in Clinical Unit and Learning Resources Center).

(M.D. and D.D.S.) Soeldner, J.S.: The Intravenous Glucose Tolerance Test, ibid., pp 107-114.

Andres, R.: Effect of Age in Interpretation of Glucose and Tolbutamide Tolerance Tests, ibid., pp 115-120.

SELF-EVALUATION

H.C.C. -

1) Be able to explain to a patient what he needs to do to prepare for each of the tests discussed, length of time it will take to carry out, etc., and when procedure is complicated, check patient's understanding. You should also be able to explain in simple terms why a particular step or procedure is needed. Practice this on 1-2 students and then ask your adviser to arrange for you to relate this information to 1-2 patients requiring these tests in the clinical unit.

Check the Patient Instruction and Procedure Sheets to verify your explanation and ask the patient to review the instructions with you to check his level of understanding.

2) Using five simulated "urine" specimens of varying glucose and acetone concentrations, in the Clinical Unit laboratory, perform dipstick and tablet tests for sugar and acetone. If your results do not agree with the knowns, check with your adviser.

D.D.S. -

1) Be able to explain the relative advantages and disadvantages of doing a routine screening for urinary glucose in your office on all patients.

Discuss your explanation in a team meeting and ask your adviser to arrange for a member of the faculty who is a dental practitioner to be present at this meeting.

2) Review the data on patient urinary sugars presented below, identify those whom you would refer to a physician, and briefly indicate

what you would tell each patient. [Urinary sugars of 5 patients are presented here - some with normal, some with borderline and some with clearly abnormal results.]

Practice your explanations with 1-2 students and check your answers in the accompanying booklet.

M.D. -

1) Be able to discuss the relative advantages of and indication for each of the various blood and urinary sugar tests discussed thus far in detecting diabetes.

2) Given the data on urinary sugars presented above plus additional data on blood sugars (including the results of oral glucose tolerance tests), interpret the results and describe how you would relate the results to the patient in each circumstance.

Practice your explanations with 1-2 students and compare your interpretations with those found in the answer booklet.

3.4 SECTION 3.0 REVIEW AND SELF-EVALUATION (H.C.C., D.D.S. & M.D.)

You have begun to learn about the types of diabetes, typical presenting symptoms, physical findings associated with diabetic complications, and the types of laboratory tests used in diagnosing diabetes in the initial period of data collection.

Now consider again, Mrs. Fine, the 58 year old obese mildly hypertensive woman, with sugar in her urine. Review the data presented earlier.

M.D. -

Based on your readings thus far, list the specific findings you would look for in the physical exam. What additional laboratory tests would you request? What explanation would you give Mrs. Fine about your findings, assuming no additional abnormalities were detected. Formulate her problem(s) at your level of understanding.

D.D.S. -

Based on your readings, list the specific findings you would look for in the oral exam.

H.C.C. -

Assume that Dr. Samuels orders an FBS. Based on your readings, write the verbal instructions you would give Mrs. Fine. How would you check her understanding?

Compare your answers with those found in the accompanying answer booklet.

4.0 - BASIC SCIENCES UNDERLYING THE UNDERSTANDING OF DIABETES

The following performance objectives are related to Section 4.0. You may find it useful to review these objectives before reading this section.

RELATED PERFORMANCE OBJECTIVES:

5,6,8,14,16,17,18,20

4.1 - Introduction (H.C.C., D.D.S. and M.D.)

Diabetes is a disease in which much productive scientific investigation has occurred, resulting in substantial understanding of the underlying biomedical processes involved at the cellular, biochemical, and molecular levels. Much of this research has had a direct impact on the methods of diagnosis and treatment. Although a great deal remains unknown or unclear, diabetes is a disease whose manifestations are increasingly understandable in terms of the underlying defects.

The following references cover the relevant normal structure and function, as well as the pathological changes that can occur.

4.2 - Overview (H.C.C.)

Diabetes is a disease where insufficient or ineffective insulin is produced by the pancreas, or where otherwise normal insulin is inhibited by "insulin antagonists" in the blood. For example, the amount of insulin released or produced may be inadequate; what is produced, be of sufficient abnormal composition or structure to be ineffective, or there may be other substances produced that inhibit the action of insulin. In an obese person the demand or load may be too great, creating a carbohydrate intolerance. Insulin, normally produced in the Islets of Langerhans in the pancreas, is necessary for the tissues to metabolize or use glucose. When insulin does not effectively accomplish this, the blood sugar rises and can eventually "overflow" into the urine. Furthermore, when the tissues cannot adequately metabolize glucose, fat is burned in excess, and this process created ketone bodies which appear in the blood and urine. These act as a body poison, and can lower the blood pH, leading to ketoacidosis.

The reference that follows explains these processes in more detail, and relates the signs and symptoms of diabetes to the underlying processes.

REFERENCE: Boyd, W.: op. cit., pp 367-370 .

4.3 - Detailed References (M.D. and D.D.S.)

Although the following list of references is long, the individual selections are short; most relate the underlying disease to the basic processes. The references have been selected to provide a very focused approach to the pathological processes underlying diabetes, or a broader perspective toward the normal structures and functions that are disturbed in diabetes. For example, the diabetes module is an excellent place to learn about basement membrane thickening in blood vessels of diabetics, as well as the normal structure of the pancreas. Management of diabetic patients and patient outcomes is directly facilitated by knowledge of the basic processes involved (e.g., in regulating insulin dosage, treating ketoacidosis).

Proceed now with references which deal with the basic pathophysiology, microanatomy and biochemical pathways affected in the patient with diabetes. Keep our patient, Mrs. Fine, in mind as you proceed through the basic science disciplines which apply to her clinical signs and symptoms.

Answer the questions throughout this section as part of the self-evaluation at the end of Section 4.3.

As pathologic and biochemical changes are intimately involved with the pancreatic islets and with changes in the wall of small caliber blood vessels, primarily arterioles, let's first consider the anatomy and microanatomy of the pancreas and the arterioles and then consider the pathologic alterations in these tissues as they may exist in Mrs. Fine:

REFERENCES

OVERVIEW: (M.D. and D.D.S.)	Diabetes Mellitus in Cecil and Loeb Textbook of Medicine, Phila: W.B. Saunders & Company, 13th ed., 1971, 1639-1647.
(D.D.S.)	Scopp, D.W.; Oral Medicine: A Clinical Approach with Basic Science Correlation, St. Louis: C.V. Mosby, 2nd ed., 1973, pp 252-257.
ANATOMY AND HISTOLOGY: (M.D. and D.D.S.)	Normal Histology of Pancreatic Islets, and Electronmicroscopy of Beta Cell in CIBA, Vol. IV, The Endocrine System, op. cit., pp 143-144.
	Anatomy Unit No. 18. University of Illinois Curriculum Syllabus.
	Histology Units 4, 13, 18, 19, 20, and 21 on Epithelial Glands, Digestive Glands, Urinary System, Pituitary and Pineal Glands, Thyroid and Parathyroid Glands, Adrenal Glands, and Endocrine Pancreas, Arterial Walls, University of Illinois Curriculum Syllabus.

What are Mrs. Fine's islets likely to look like at this stage of her disease? What proportion of the normal number is she likely to have? How will this change over time?

You have learned from your readings that the beta cells in the islets are the functional units involved in glucose regulation by virtue of their endocrine product, insulin. As a lack of insulin is responsible for the biochemical alterations encountered in Mrs. Fine's blood and urine, a consideration of the pathologic changes occurring in her pancreas is to be explored. In addition, vascular anomalies are seen in diabetic patients and indeed may be implicated in causation of impaired insulin transport out of the beta cell and into the vascular lumen. This impedence theory is equivocal at the present time. Nevertheless, microvascular defects, whether they are the cause or the effect of the disease, are prevalent. At this point, let's investigate the pathologic alterations seen in Mrs. Fine's pancreas and vascular system:

REFERENCES:

PATHOLOGY: (M.D. and D.D.S.)	Dysfunction of the Islet Cells, Islet Pathology in Experimental Animals and in Human Diabetes, Diabetic Micro-Angiopathy, Diabetic Retinopathy Intracapillary glomerulosclerosis, Diabetic Nephropathy and Necrotizing papilitis, Diabetic Neuropathy Atherosclerosis in Diabetes and Vascular Insufficiency in Diabetes in *CIBA*, Vol. IV, Endocrine System, op. cit., pp 159, 162-170.
	Diabetes Mellitus in Robbins, S.L. *Textbook of Pathology*, 3rd ed., Phila.: W. B. Saunders & Company, 1967, pp 190-203.
	Bagdad, J.D.: Infections in *Diabetes Mellitus: Diagnosis and Treatment*, Vol. III, op. cit., pp 211-216.
	Knowles, H.C.: "Prognosis in Diabetes", ibid, pp 368-376.
PATHOLOGY: (M.D.)	Kilo, C., Vogles, N.J., & Williamson, J.R., Basement Membrane Thickening in Diabetes, in Diabetes Mellitus: Diagnosis and Treatment, Vol. III, op. cit., pp. 289-294.
	Zarkowitz, H., Foot Care in Diabetic Patients, ibid, pp 317-322.
	Davis, M.D., Ophthalmologic Problems in Diabetes Mellitus, ibid, pp 323-328.
	Osterby, R., Diabetic Nephropathy, ibid, pp 353-358.
(D.D.S.)	McMullen, J.A. et al: Microangiopathy within the gingival Tissues of Diabetic Subjects with Special Reference to the Diabetic State. *Periodontics* 5:61, 1967.

How likely to develop are abnormal findings in Mrs. Fine's kidneys? Cardiovascular system? How soon? Is she likely to have any already in existence? How are the development of complications likely to be affected by her hypertension?

Now that you are familiar with the pathologic changes occurring in the pancreas, vascular system and retina and the relationship of the vascular changes to hypertension in diabetes, a consideration of the abnormal biochemical findings regarding blood tests, urine tests and signs and symptoms can be examined.

Recall that Mrs. Fine is obese and spilling sugar into her urine. These obvious abnormalities are intimately associated with insulin lack as it relates to carbohydrate and lipid metabolism. Before analyzing the anomalous biochemical pathways, review the relevant references which deal with the normal physiology of carbohydrate (chiefly glucose) metabolism and with the related biochemical pathways for lipids and certain amino acids.

REFERENCES

BIOCHEMISTRY: (M.D. and D.D.S.)	Chemical Structure of Insulin and Glucagon, Uptake of Glucose by Different Cells, Glycolsis, Glycogen Metabolism, The Oxidative Tricargoxylic Acid Cycle, Fat Metabolism, Protein Carbohydrate Interrelationships, Carbohydrate Metabolism of the Muscle cell, Intermediary Metabolism of the Liver Cell, in *CIBA* Vol. IV, The Endocrine System, op. cit., pp 143-156.
BIOCHEMISTRY: (M.D.)	Carbohydrates, The Metabolism of Carbohydrates, The Metabolism of Lipids, The Chemistry and Function of Insulin and Glucagon in *Review of Physiological Cehmistry* by Harper, 13th ed., Los Altos: Lange, 1971, pp 1-13, 227-302, 426-438, 358-363.
	Cahil, G.F.: Control of Gluconeogenesis, ibid, pp 57-62.
	Frohman, L.S.: Central Nervous System Control of Carbohydrate Metabolism, ibid, pp 63-66.
	Goodner, C.J.: Central Nervous System Modulation of Fat Metabolism, ibid., pp 67-70.
PHYSIOLOGY: (M.D. and D.D.S.)	Endocrine Functions of the Pancreas and the Regulation of Carbohydrate Metabolism, Renal Function, and Regulation of Extra-

cellular Fluid Composition and Volume, in Medical Physiology by W.F. Ganong, 4th ed., Palo Alto: Lange, 1969, pp 272-291, 559-583, 587-593.

Sussman, K.E.: Mechanism of Insulin Secretion, ibid, pp 19-24.

Floyd, J.C.: Dietary Stimulants to Insulin Secretion, ibid, pp 25-30.

Dupre, J. & Chisholm, D.J.: Gastrointestinal Factors and Insulin Release, ibid, pp 47-50.

Explain Mrs. Fine's relative lack of symptoms coincident with glycosuria. Are her levels of circulating insulin likely to be elevated, normal or decreased, in response to a glucose load? What will be her pattern of insulin levels in response to meals over the course of a day?

With the basic knowledge of biochemical pathways involved with obtaining energy units (ATP) from glucose catabolism and the relationship carbohydrate metabolism shares with lipid and certain amino acids you can easily conceptualize the biochemical and clinical abnormalities as they occur in Mrs. Fine (e.g., elevated blood glucose, elevated triglycerides and cholesterol, accumulation of ketone bodies, and development of acidosis).

Proceed with references dealing with the metabolic abnormalities in diabetes and consideration of pathophysiologic aspects of this disease:

REFERENCES

(M.D. and D.D.S.)

Crofford, O.B.: Metabolic effects of Insulin in Diabetes Mellitus: Diagnosis and Treatment, Vol. III, op. cit., pp 51-56.

Sims, E.A.G.: Metabolic Abnormalities Associated with Obesity, ibid. pp 75-80.

Cerasi, E. & Luft, R.: Pathophysiology of Diabetes in Diabetes Mellitus: Diagnosis and Treatment, Vol. III., op. cit., pp 1-6.

Spiro, R.G.: Biochemical Basis of Diabetic Microangiopathy, ibid, pp 275-280.

CIBA, Clinical Symposia on Diabetes Mellitus.

How are the normal biochemical pathways modified by Mrs. Fine's obesity? What modifications of normal paths for metabolizing sugar have occured in Mrs. Fine? Are there likely to be any clinical manifestations of these changes (as reflected in blood tests, urine tests, or signs and symptoms)?

A final consideration regarding Mrs. Fine is her familial history of diabetes mellitus particularly in terms of passing this trait on to subsequent generations.

REFERENCES

GENETICS AND IMMUNOLOGY:
(M.D. and D.D.S.)

Genetics Units 15, 16 and 17 on Gene Action, Human Variation, Genetics of Diseases, in the University of Illinois Curriculum Syllabus.

Simpson, N.E.: Genetic Considerations in Diabetes Mellitus: Diagnosis and Treatment, Vol. III, op. cit., pp 71-74.

How likely is it for Mrs. Fine's children to develop diabetes?

SELF-EVALUATION

D.D.S. and M.D. -

1) Give one explanation of how the micro-angiopathic defect in diabetes can affect complications such as: increased instances of oral and other infections, wound healing, etc.

2) Identify variables that should be carefully and routinely monitored in diabetic patients to determine the course of development of complications.

3) Explain the metabolic events in the development of ketoacidosis. Relate these to the physical findings, symptoms and abnormal lab values present during ketoacidosis.

4) Refer to the C.R.I.S. Program on the computer at the Learning Resource Center. Select from the index the pool of test items which cover

the basic science material referenced above. The minimum passing level for each item is provided to enable you to compare your performance to that of other students.

Check your answers to the above listed Self-Evaluation questions and the ones found throughout the section with the answers in the accompanying booklet. Consult with your adviser if you have any questions.

5.0 - MANAGEMENT

The following performance objectives are related to Sections 5.1 - 5.4. You may find it useful to review these objectives before reading the section.

RELATED PERFORMANCE OBJECTIVES:

#13,16,17,18,19,20,29,31,32,33,35,38.

5.1 - Introduction (H.C.C., D.D.S. and M.D.)

Management of the diabetic patient is the most challenging aspect of this disease as there is a complex interplay of emotional, behavioral, and physiological factors that affect patient outcome.

Changing a life style or firm eating habits developed over years, becoming dependent on a daily injection, performing many small added activities that in turn necessitate a different approach to living, all can produce an emotional impact that must be considered in designing a management plan. Likewise, the behavioral response of the patient to these emotional factors also must be evaluated. An example of such a response is a patient's use of his dietary needs to manipulate his family for special favors. Lastly, because the neuro-endocrine system has substantial effects on the metabolism of carbohydrates,the emotional and behavioral problems can have a direct physiological effect, through the neuro-endocrine system, on the patient's level of diabetic control. The health professional and patient must be aware of the significance of these variables so that an effective plan of management can be designed and implemented.

Management of the patient is also complicated by the kind and severity of the diabetes, each aspect of which require different details of management

although the general principles are the same.

The general therapeutic goal is to maintain the patient in as normal a state as possible without producing symptoms of hyperglycemia or hypoglycemia. Depending on the patient, these goals are achieved with diet, and/or insulin and/or oral hypoglycemic agents. The patient assumes a large responsibility for the day-to-day management of his disease and generally monitors his progress according to urine testing and presence or absence of hypoglycemic and hyperglycemic symptoms. Because of this responsibility, patient education is critical to successful outcome in diabetes. (Section 5.4 discusses patient education.)

As part of a management plan, variables that indicate complications of diabetes must also be monitored, including signs of visual deterioration, cardiovascular problems, skin problems and compromised circulation in the lower extremities, and peripheral neuropathy. When gathering initial diagnostic information it is important to acquire base line data in these areas so that they can be adequately followed and monitored.

M.D. -

View the videotape in the Learning Resources Center entitled "The New Diabetic Needing Hospitalization." Accompanying the tape is a handout that asks you to make certain observations about the behavior of both physician and patient. When finished, discuss these with your adviser, who will arrange for to talk with a simulated "new diabetic." (The videotape illustrates two versions of the patient learning about his disease, one in which the physician is sensitive to the impact of the disease and the concerns of the patient, and one where the physician is less effective in helping the patient deal with his feelings and anxieties.)

5.2 - Further Diagnostic Information (M.D.)

5.21 - Diabetic Complications:

If in the standard data base there is evidence of renal, cardiovascular or ophthalmological involvement, it may be desirable to obtain further diagnostic tests (e.g., to evaluate renal function, serum creatinine, timed IVP). It may also be desirable to refer the patient for an eye examination by an ophthalmologist. A baseline EKG may be desirable if the patient is an adult. Serum cholestrol and triglyceride levels are worthwhile to obtain both as a baseline and as a guide to dietary management.

REFERENCES

See preceding pathology references listed in Section 4.3 as well as the following:

Fredrickson, D.S.; Hyperlipoproteinemia with Carbohydrate Intolerance in Diabetes Mellitus: Diagnosis and Treatment, Vol. III, op. cit., pp 377-382.

Bierman, E.L.; Hyperlipermia in the Manifest Diabetic, Ibid., pp 383-386.

SELF-EVALUATION

1) From the standard data base, you learn that Mrs. Fine's BUN is within normal limits. Are there any additional studies you think are indicated at this point? Check your answers with those in the accompanying answer booklet.

5.22 - Ketosis/Ketoacidosis

In the newly diagnosed diabetic, particularly the juvenile, it is important to evaluate whether ketosis or ketoacidosis are present. This can be done by evaluating the patient's state of dehydration, presence of symptoms of acidosis (nausea, vomitting, etc.), and measuring serum ketone levels as well as checking electrolytes and blood Ph if necessary. The metabolic processed involved in the development of ketoacidosis have been discussed in previous references. Further discussion, including diagnosis and management, is provided in the references below.

REFERENCES

Danowski, T.S.; Diabetic Ketoacidosis, in Diabetes Mellitus: Diagnosis and Treatment, Vol. III, op. cit., pp 249-254.

Robson, G.B.; Management of the New Diabetic Patient. in Endocrinology in Clinical Practice, Gordon and Lisser, eds., Chacago: Yearbook Pub., 1958, pp 178-182.

SELF-EVALUATION

M.D. -

1) Find the patient presentations and videotapes and slides labeled "Diabetic Keotacidosis" in the Learning Resources Center. Go through each and determine whether or not significant keotacidosis is present. (Answers are given at the end of each presentation.) Then, discuss these with your adviser who will arrange for a role-playing session with a simulated patient representing a diagnosed diabetic needing hospitalization. In the simulated interview you should be able to explain to the patient the implications of the disease and the need for hospitalization and deal effectively with the emotional impact of the diagnosis on the patient and his family (e.g., by encouraging patient to express his feelings, ask questions, answer questions posed by family and patient, etc.).

5.3 - Treatment Plan

5.31 - Introduction (M.D., D.D.R., M.C.C.)

The management of diabetes is foucused on two areas, the first involving the actual therapeutic regimen that the patient is placed upon and the second the education of the patient in terms of understanding his disease, maintaining his therapeutic regimen, and monitoring his disease.

"Diabetic patients who present themselves for treatment for the first time may be divided into three main groups: (1) obese patient with mild diabetes who will do well on simple dietary management, aimed mainly at weight reduction; (2) patients with more severe diabetes who have lost weight because of their disease and who will require administration of insulin, as well as dietary management; and finally, (3) patients with an acute complication, such as infection, injury, or acidosis."*

The following references discuss the area for which decisions need to be made about the type of diet, need for adjustment of insulin dosage, frequency of urine testing, and significance for the individual patient of monitoring specific signs or symptoms:

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* Robson, G.; op. cit., p. 178.

REFERENCES

OVERVIEW: (M.D., D.D.S. and H.C.C.)	Ricketts, H.T.; Goals, Objectives and Approaches, in Diabetes Mellitus: Diagnosis and Treatment, Vol. III., pp 129-132.
OVERVIEW: (M.D. and D.D.S.)	Treatment of Diabetes Mellitus in Cecil and Loeb Textbook of Medicine, op. cit., pp 1647-1656.
OVERVIEW: (M.D.)	Robson, G.B., Management of the New Diabetic Patient in Endocrinology in Clinical Practice, op. cit., pp 178-182.
DIET: (M.D., D.D.S. & H.C.C.)	Feldman, J.M.; Diet Principles and Applications, in Diabetes Mellitus: Diagnositc Treatment, Vol. III, op.cit., pp 133-138.
INSULIN: (M.D.)	Molnar, G.D.; Clinical Use of Various Insulin Preparation, Ibid., pp 139-146.
ORAL HYPOGLYCEMIC AGENTS: (M.D.)	Lebovitz, H.E. & Feldman, J.M., Oral Hypoglycemic Agents: Mechanisms of Action, Ibid., pp 147-152.
(M.D., H.C.C. & D.D.S.)	Colwell, J.A.; Therapy with Oral Hypoglycemic Agents, Ibid., pp 153-158.
(M.D., H.C.C. & D.D.S.)	Prout, T.E. & Miller, M.; Effect of Oral Hypoglycemic Agents on Cardiovascular Disease, Ibid., pp 159-166.
(M.D., H.C.C. & D.D.S.)	Keen H. & Jarrett, R.J.; Effects of Oral Hypoglycemic Agents on Cardiovascular Disease, Ibid., pp 167-172.
PROBLEMS IN MANAGEMENT: (M.D., H.C.C. & D.D.S.)	Moss, J.M.; Common Errors in the Treatment of Diabetes, Ibid., pp 181-184.
(M.D., H.C.C. & D.D.S.)	Drash, A.; Problems Associated with Diabetes in Children, Ibid., pp 197-200.
(M.D., H.C.C. & D.D.S.)	Williams, T.F.; Management of Elderly Persons with Diabetes, Ibid., pp 201-206.
(M.D., H.C.C. & D.D.S.)	Gastineau, C.F.; Hypoglycemia Secondary to Therapy, Ibid., pp 261-268.

(M.D., H.C.C. & D.D.S.)	Barnett, D.M.; Emotional Factors in Diabetes, Ibid., pp 387-392.
(M.D.)	Beck, T.; Oral Contraceptive Agents, Ibid., pp 223-228.
(M.D.)	Pedersen, J.; Management of Pregnant Diabetic, Ibid., pp 235-242.
(M.D.)	Bondy, P.K.; Hypoglycemic States, in Cecil-Loeb Textbook of Medicine, op. cit., pp 1656-1659.

5.32 Management (M.D.)

Once you have read the above references, consider again Mrs. Fine. Physical findings, other than her obesity and elevated blood pressure, were unremarkable. She had no evidence of retinopathy, her heart was not enlarged to palpitation or percussion, rate and rhythm were normal with no murmurs or abnormal heart sounds. Her extremities were warm and her peripheral pulses were equal biliterally and moderately strong. Her neurological exam was within normal limits. Additional laboratory data revealed a random blood sugar (taken at her initial visit) of 250 mg. per cent, and her BUN, CBC & EKG were within normal limits.

Based on your readings, and the above additional data, write a full management plan for Mrs. Fine, taking into consideration the stage of her diabetes, as well as her family situation, life style, etc.

If you have already taken the hypertension module, include a plan for her hypertension.

When the plan is prepared discuse it with your adviser. Then discuss the plan with the simulated patient representing Mrs. Fine. Videotape this session and then review it with your adviser and "Mrs. Fine" to check "Mrs. Fine's" level of understanding and any concerns or questions she may have that were not addressed.

5.33 Management (D.D.S.)

Assume you are the dentist who originally referred Mrs. Fine to Dr. Samuels. She is returning to you for check-up six months after her diabetes has been diagnosed. What modifications would you make in your usual plan for Mrs. Fine? Mrs. Fine asks you if her diabetes will affect any procedures that you may need to perform. What would you tell her? Discuss your plans with your adviser.

5.34 Management (H.C.C.)

The H.C.C. frequently serves as the communication link: (1) between the physician or dentist and the patient and (2) between social agencies and the patient, physician and dentist.

The H.C.C. will receive telephone calls from the patient concerning his progress or problems the patient is encountering and will have to transmit this information to the physician or dentist. The H.C.C. may also be asked questions concerning diet or drug therapy.

The H.C.C. will have to contact a patient if an appointment is missed, determine why it was missed and reschedule another appointment. The H.C.C. must be sensitive to cues indicating why a patient has missed an appointment and decide if the physician or dentist should be informed. Likewise, the H.C.C. must be sensitive to changes in the patient's behavior or appearance and inform the physician or dentist of such changes.

The gathering and updating of referral and patient education information from varied sources (e.g., social agencies, nutritional information, American Diabetic Association) is also the responsibility of the H.C.C. She/He must evaluate this information and distribute the relevant information to the appropriate practitioner.

SELF-EVALUATION

H.C.C. -

Refer to the patient problems entitled, "Diabetic Management for the Health Care Coordinator Student" in the Learning Resources Center. These problems focus on the questions patients may ask you (in person or over the telephone) regarding their management. Formulate your answers, responding to their questions and the questions in the problems. When finished, discuss your responses with your adviser, who will arrange a role-playing situation with a simulated patient.

SELF-EVALUATION

D.D.S. and M.D. -

Refer to the patient problems, entitled, "Diabetic Management for the Medical and Dental Student" in the Learning Resources Center. These will give you practice in making the judgments and decisions necessary to manage patients with various kinds of diabetes. Your decisions will be evaluated while you are taking a particular patient problem. [There are separate patient-management problems for the dental student, depicting diabetic dental patients in situations that require the dentist to alter his treatment plan or make certain judgment or decisions relative to evaluating the level of diabetic control and the need for physician involvement.]

5.4 - Patient Education (H.C.C., D.D.S. and M.D.)

RELATED PERFORMANCE OBJECTIVES :

22,23,24,25,26,27,28.

Currently there is no cure for diabetes thus, control of the disease is the desired outcome or therapeutic goal.

Although members of a health care team possess the knowledge and the skills to instruct the patient on how to control diabetes, the key to successful management and control of diabetes is the involvement of the patient, himself. The patient is responsible for the principle elements in the management of his diabetes--diet, medication and personal care. The support and education of the patient's family can also significantly affect the desired outcome--control of diabetes.

The following patient presentations illustrate the types of problems, concerns and situations with which various patients, their families and health care teams are confronted when a diagnosis of diabetes mellitus has been made.

As you read the presentations consider other problems and concerns the patient and his family may have. Often these concerns are not obvious; they are transmitted in a subtle fashion. In order to design an adequate patient education program and carry it out, practitioners must be sensitive to both overt and hidden concerns and problems.

PATIENT PRESENTATION #1: Mrs. Doris Fine:

After a thorough history, physical examination and related lab tests were performed, Mrs. Fine's diagnosis was confirmed. Dr. Samuels' management plan consists of a diabetic "weight reduction" diet and daily urine testing to determine the level of control. Neither oral nor insulin therapy is indicated. Mrs. Fine will relate the results of her urine testing and her progress in weight reduction by telephone to Dr. Samuels and the Health Care Coordinator. She will return for an office visit after one month. The frequency of subsequent office visits will be dependent on her progress.

Mrs. Fine appears somewhat depressed when she is told of the diagnosis of diabetes. She is confused about what diabetes really is ... because she doesn't understand what causes it, she wonders why she can't take medication to control it like other members of her family did. She is also fearful that she won't be able to control her diet--she never has been able to control it in the past. One of her daughters works and Mrs. Fine takes care of her two grandchildren three full days a week. She wonders whether she can still do this. Mrs. Fine has her children and their families over very frequently for dinner and she is concerned that she will not be able to continue all her activities and still maintain her diet. Family activities contribute significantly to Mrs. Fine's happiness and she feels depressed because she thinks she will have to curtail them ... she is also worried about plans for the extensive vacation for which she and her husband have planned and saved over the years. She thinks she won't be able to go and she knows her husband will be disappointed. Can she test her urine when she travels? Will she be able to follow her diet when traveling and eating out in restaurants?

Mrs. Fine is somewhat embarassed about her questions and concerns and she is discouraged about her ability to control diabetes. She may not be able to do many things for and with her family and she wonders if she and they can accept it.

PATIENT PRESENTATION #2: Jim Simon:

Jim Simon is a 12 year old black child who lives in a low-income urban neighborhood. He is at his neighborhood medical clinic with his mother when he is told that he is diabetic. His management plan includes a diabetic diet, insulin therapy and urine testing four times daily initially. He will telephone his physician weekly for the first 7 weeks to discuss his level of control, and then an office visit schedule will be adopted depending on his control. His physician suggests that Jim spend 4 days in a near-by hospital to control his diabetes, and learn more about diabetes and his role in his care.

Jim is an active boy who participates in many school activities. He is class president and on the baseball team. His mother works and his grandmother cares for him, his brother and 2 sisters. His Dad is in the Army and won't be home until December. Jim has a paper route early in the morning and usually grabs a snack for breakfast before school. He buys lunch at school. His grandmother prepares dinner for the family.

Jim's mother was told about his diabetes before this visit and she feels somewhat responsible as her father-in-law had diabetes. She wonders if it isn't her fault, perhaps she should have thought more carefully before having children. She is concerned that she will have to stop work in order to care for Jim. Will she have to give him insulin injections? Test his urine? Can he eat lunch at school anymore or eat the same dinner as the family? Will he have to test his urine at school? How will they pay for Jim's stay at the hospital? Can he still try out for little league baseball? How will her husband react when he hears Jim has diabetes? She remembers how upset her husband gets when he talks about how his father changed when he became diabetic.

PATIENT PRESENTATION #3: Mrs. Alice Sylvester

Mrs. Alice Sylvester is a 74 year old widow who lives alone in a small apartment in a rural community. She has lived in the same town her entire life. Although she has close friends living near her, her only child lives a day's drive away.

Mrs. Sylvester made an appointment with her physician because she is having problems with her eyesight. During her visit a urinalysis was performed and sugar was found in the urine. Subsequent blood tests indicate diabetes and Mrs. Sylvester's visual problems were due to refractory changes in her lenses. Her physician planned a management program which initially consists of a diabetic diet, daily urine testing, monthly office visits and referral to an ophthalmologist.

Mrs. Sylvester's reaction to being told she has diabetes is concern about losing her independance. (Her poor eyesight and her arthritis have made it increasingly difficult for her to visit her friends, shop, go out for a walk.) She is confused about what diabetes is ... Will she be able to test her urine? When possible, Mrs. Sylvester enjoys meeting her friends for lunch or dinner - she wonders if she can still eat out with her friends. Mrs. Sylvester is afraid she will have to be dependent on her son now. Will she have to leave her home and live with him in a new community?

SELF-EVALUATION

M.D. -

(A) After reading each patient presentation formulate a patient education program. General References - (articles, books, self-instructional units, pamphlets, etc.) about patient education both for you and the patient with respect to diabetes are available. Some are supplied with the study guide and others are on reserve at the library. After each program is formualted you will be able to evaluate it by carrying it out with a simulated patient (and his family when appropriate) similar to the ones described in the patient presentations described above. Some of these simulated patients will be role-played by students; others by actors.

You will be able to videotape the presentation of one of your patient education programs to a simulated patient and his family. You will also be able to discuss the effectiveness of your program with this simulated patient, his family and your adviser.

The following areas should be considered in your evaluation:

1) Did you acknowledge and address the patients' concerns as described in the patient presentations?

2) Did you elicit additional concerns and questions?

3) Were the appropriate family members included in the patient education program?

4) Did the family members understand the information presented?

5) Did you provide the patient with enough information or sources of information, or did you overwhelm the patient with too much or the wrong kind of information?

(B) After you have formulated your patient education programs, review the special problems of each patient.

With respect to Mrs. Fine, did you:

1) consider alternative methods of weight control (e.g., "obesity clinic", "behavior modification", "diet clubs") and recommend an appropriate one? What were the reasons for a particular recommendation? (For in-depth knowledge of methods of weight control, review of the obesity module is suggested.)

2) refer Mrs. Fine to a dietician? explain how preferred foods can be substituted in her diet?

3) invite her family's participation in her dietary management (e.g., 1. by suggesting the need for their assistance in the preparation of some meals; 2. explaining the need for their support and their acknowledgement of her successes in weight reduction.)

4) reassure her that her activities need not be significantly curtailed and that with proper care her general good health should continue.

With respect to Jim Simon, did you:

1) discuss the effect of his participation in sports or exercise with him?

2) discuss Mrs. Simon's concern that she may be responsible for Jim's diabetes?

3) explain to Mrs. Simon why she should encourage Jim's self-care in managing his diabetes?

With respect to Mrs. Sylvester, did you:

1) consider the effect her poor vision may have on her

interpretation of her urine tests?

2) determine the level of Mrs. Sylvester's understanding of her management program - diet, urine testing, office visits?

(C) Role-play one of the simulated patients described in the preceding sections.

1) How did your role-playing experience affect the patient education programs you prepared ?

N.C.C. and D.D.S. -

(A) N.C.C. - read and/or review references # 1-9, 11-21, 23-25, 28,29.

D.D.S. - read and/or review references #2-4,11,14,23-26.

(B) Prepare a list of the areas your health profession can and should participate in patient-education.

(C) Role-play one of the simulated patients described in the preceding section.

1) How did your role-playing experience effect your understanding of the diabetic patient and his problems?

Discuss your answers with your fellow students in a team meeting.

M.D., D.D.S. and N.C.C. -

Ask for a special "diabetic" meal ticket at the cafeteria. This is a ticket which will entitle you to three paid "diabetic" lunches.

During your lunches with your fellow students, discuss your reactions to the diabetic diet, problems you encountered or could foresee if you had to remain on a diabetic diet.

REFERENCES

GENERAL:

(1) Guidelines for Chronic Care, Project Amos Chronic Care Program, June 1973, pp 80-127.

(2) Etzwier, Donnell D., Patient Education in Diabetes Mellitus: Diagnosis and Treatment, Vol. III, 1971, pp 185-190.

(3) Barnett, D.M.; Emotional Factors in Diabetes in Diabetes Mellitus: Diagnosis and Treatment, Vol. III, 1971, pp 387-392.

(4) Diabetes as Patients See It, Patient Care, March 14, 1973, pp 21-71.

(5) Facts About Diabetes, American Diabetes Association, Inc.

(6) Teaching the Diabetic Patient, Diabetes, Vol. V, 1956, pp 146-149.

(7) Who's Teaching the Diabetic?, Diabetes, Vol. XVI, 1967, pp 11-17.

(8) A Guide for the Diabetic, Eli Lilly & Co. Indianapolis, Indiana.

(9) Dolger, H.; How to Live with Diabetes, "You and Diabetes." "Calorie Control for You," I.D. Card, Diabetic Medallion and urine test record folder contained in Diabetes Information Kit from Upjohn.

(10) A Study of the Incidence and Causes of Poor Control in Patients with Diabetes Mellitus, American J. Medical Sciences, Vol. 241, 1961, pp 64-69.

(11) Bradley, R.K.; Importance & Techniques of Patient Education, in Diabetes Mellitus: Diagnosis and Treatment, Vol II, 1967, pp 83-90.

(12) Jean-Phillippe Association, Treatment & Teaching Centers for Diabetic Patients in Teaching Centers for Diabetic Patients.

DIET:

(13) Food Facts, Robert J. Brady Co., 130 Que Street N.E., Washington, D.C. 20002. cc 1972.

	(14)	Feldman, J.M.; Diet Principles and Applications in Diabetes Mellitus: Diagnosis and Treatment, Vol. III, 1971, pp 133-138.
	(15)	Meal Planning with Exchange Lists, American Diabetes Association, Inc.
	(16)	You & Your Diabetes, An Audio Frame Systems Program for Self-Instruction, Appleton-Century-Crofts, N.Y. Div. of Meredith Corp., 1967, Books A-D.
	(17)	Italie, T.V. & Campbell, R.G.: Diet Principles & Application in Diabetes Mellitus: Diagnosis and Treatment, Vol. II, 1967 pp 91-99.
INSULIN ADMINISTRATION:	(18)	Diabetes, Robert J. Brady Co., 130 Que Street, N.E., Washington, D.C. 20002, Copyright 1972.
EXERCISE:	(19)	Exercise, Calories & Diabetes, American Diabetes Assoc., Inc.
URINE TESTING:	(20)	Self-Instructional Unit, How to Collect and Test Urine & Record Results.
DIABETES IDENTIFICATION CARDS:	(21)	"Identification Cards", American Diabetes Association, Inc.
PATIENT EDUCATION-JUVENILE DIABETIC:	(22)	"What the Juvenile Diabetic knows about his Disease." Pediatrics, Vol. 29, 1962, 135-41.
	(23)	"Juvenile diabetes and its management: Family, social and academic implications." JAMA, Vol. 181 pp 304-08.
GERIATRIC DIABETIC:	(24)	"Management of Elderly Persons with Diabetes", T. Franklin Williams, M.D., Chapter in Diabetes Mellitus: Diagnosis and Treatment, Vol. III, 1971, pp 201-206.
DIABETIC KETOACIDOSIS:	(25)	"Diabetic Ketoacidosis", T.S. Danowski, M.D. Chapter in Diabetes Mellitus: Diagnosis and Treatment, Vol. III, 1971, pp 249-254.
HYPOGLYCEMIA:	(26)	"Hypoglycemia Secondary to Therapy", Clifford F. Gastineau, M.D., Chapter in Diabetes Mellitus: Diagnosis and Treatment, Vol. III, 1971, pp 261-266.
COUNSELING ON MARRIAGE AND CHILDREN:	(27)	"Oral Contraceptive Agents", Paul Beck, M.D., Chapter in Diabetes Mellitus: Diagnosis and Treatment, Vol. III, 1971, pp 223-228
	(28)	"Marriage and the Diabetic", American Diabetes Association, Inc.
	(29)	"Healthy Babies in Diabetic Mothers" American Diabetes Association, Inc.

5.5 Team Approach to the Management of Diabetic Patients

RELATED PERFORMANCE OBJECTIVE: #30

As you have learned thus far, diabetes is characteristic of many chronic diseases in that your patient care goal is effective long-term management or control, not cure. One of the key emphases in this section of the module is what this goal means to you as a provider. Not only is the role of the patient different in that he must assume major responsibility for carrying out his own treatment at home, but the roles and responsibilities of health care providers are different as well. Your task individually and collectively as a team is to support the patient in his effort to assume the major share of his daily care. A closely integrated and coordinated effort by the physician, nurse, health care coordinator, dietian and dentist is essential in the chronic management of ambulatory diabetic patients like Mrs. Doris Fine.

There are two main functions for which the health care team needs to coordinate closely its efforts and resources. The first is during the time of initial diagnosis when a treatment plan is developed. At this time considerable effort is directed at patient education regarding the following:

a) what is diabetes and how is it controlled?

b) diet and exercise for diabetics

c) insulin treatment and hypoglycemic reactions
d) care of feet
e) prevention of ketoacidosis
f) life style adjustments

Interdisciplinary team conferences during the diagnosis and management phases should aim to clarify the specific roles and responsibilities of each member with respect to the above general topics. It may be very important to consider inviting the patient to these team conferences owing to the need for the patient to carry out a major role of self-treatment.

A team member may initiate a conference if he has a problem with respect to a specific patient or if he identifies the problem that is not being solved by the team. This team member would then be responsible for the coordination of the conference.

One of the major decisions the team will need to make initially is who will assume over-all responsibility for coordinating the team's efforts. The physician is typically responsible for prescribing insulin and other medications and the medical management of the patient. Often the nurse or nurse practitioner instructs the patient in urine testing, insulin administration, and care of feet. Instruction and motivation regarding diet is delegated to a dietian whenever possible. The health care coordinator, as a newly emerging member of the health care scene, may well assume a portion of the patient education responsibilities. What is crucial, however, is not so much who does what to whom, but how the treatment plan is coordinated so as to ensure comprehensive, high quality care.

The second function which the team needs to carry out is the long-term monitoring of patient care. In order to organize the pattern of the team's activities it is useful to refer to the original treatment plan's goals and responsibilities.

At subsequent appointments (assuming the patient is stable and in control - the interval may be every three to six months) the following areas should be reviewed by the team:

a) weight and diet
b) metabolic aspects of diabetes control
c) care of the feet

d) cardiovascular risk factors
e) other coexisting physical, emotional and social problems.

The focus of the team conference now becomes the question of how well the patient is managing in these areas, and how the team can help in deficient areas. Again, clarity regarding roles and responsibilities, leadership and making certain that the team reinforces each others efforts all contribute to the effective interdisciplinary management of diabetes.

SELF-EVALUATION

H.C.C., D.D.S. and M.D. -

1) Referring specifically to the management plan for Mrs. Fine, what roles do you think you should assume at this point? What roles and responsibilities do you believe the other health professions students (H.C.C., D.D.S. and M.D.) should assume? Discuss your thoughts with your fellow students at a team conference. Ask your adviser to arrange for you to observe a team conference in the clinical unit.

2) [At a simulated case conference, H.C.C., D.D.S. and M.D. students will be asked to role-play what they each think their responsibilities should be regarding the care of Mrs. Fine.]

6.0 MONITORING PATIENT PROGRESS (H.C.C., D.D.S. and M.D.)

RELATED PERFORMANCE OBJECTIVES: #32,33,34,37,38.

As diabetes is a chronic disease, one of the most important aspects of the management program is the monitoring of the patient's progress by the patient, himself, and by the health care team. Continuous self-monitoring (e.g., urine testing and recording, and following diet, insulin or oral therapy plan) by the patient will assist the health care team in determining whether the management program is appropriate for the patient. The accessibility of the health care team, the "ease" of communication between the patient and members of the health care team, and the "ease" and effectiveness of communication among members of the health care team can often times prevent problems from occurring.

In order to relate some of the problems that may arise after the management program has begun, review Mrs. Fine's progress to date:

Mrs. Fine's determination and desire not to have her diabetes prevent her from continuing with her daily activities, plus the support of her family, had facilitated the control of her diabetes. She began to lose weight by following the diet she planned with her physician and dietician. Her family encouraged her dieting by being supportive and recognizing her successes.

After her diabetes was under control, visits to her physician were reduced as was the frequency of phone contacts. In subsequent weeks, Mrs. Fine's behavior changed. She was not as strict with her diet as before. She made friends in her neighborhood and began to socialize and entertain. She gradually began to regain the weight she had lost and she did not test her urine as frequently as prescribed. At her last appointment, her physician decided to change her management program to include oral therapy.[*]

The following incident alerted Mrs. Fine, the health professionals involved with her care, and her family that she was having difficulty following and understanding her new management program:

Mrs. Fine had a 2:30 PM dental appointment. Prior to the appointment she had been shopping with her grandchildren and consequently she didn't have time to eat lunch before her dental appointment. Her appointment was delayed until 3:00 PM. As her dentist knew she was diabetic, her urine was tested in the interim. The test was negative for sugar.

By the time Mrs. Fine saw her dentist she had become weak and had a headache. Her dentist reviewed the results of the urinalysis. He questioned her on how she was feeling and recognizing her symptoms he treated her accordingly. He discussed with Mrs. Fine the reason for her discomfort and how she could have prevented it. He also suggested that she contact her physician. Subsequently, her dentist contacted Mrs. Fine's physician and communicated what had occurred. When the health care coordinator did not receive a phone call from Mrs. Fine by the next morning, she/he called up Mrs. Fine and scheduled an appointment for her.

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[*] Some physicians would not prescribe oral therapy in patients like Mrs. Fine. Instead, they would work with the patient to develop a more effective weight reduction program.

Review Mrs. Fine's history and read pp 37-51 in The Doctor and His Patient, by Samuel W. Bloom, Russell Sage Foundation, New York, 1965.

Other suggested reading:

Gastineau, C.F.; "Hypoglycemia
Secondary to Therapy", in Diabetes
Mellitus: Diagnosis and Treatment,
Vol. III, op. cit., 1971, pp 261-268.

SELF-EVALUATION

M.D., H.C.C. & D.D.S. -

1) At a simulated case conference each student (M.D., D.D.S. and H.C.C.) will be asked to critique the management plan outlined thus far for Mrs. Fine with respect to the recent problems she has been having.

a) What do you think can be done to help her better control her diabetes?

b) What specific things can you and the other team members do to help her?

2) Analyze the possible reasons why Mrs. Fine's successful monitoring behavior changed?

M.D. and D.D.S. -

1) To what do you attribute Mrs. Fine's symptoms to at the dentist's office? What other symptoms are associated with this reaction?

a) How would you have treated her, why?

b) Is this a common occurrence for someone on her management program?

Compare your answers with those found in the answer booklet.

D.D.S. -

1) Realizing that Mrs. Fine was having difficulty following her management program how would you have conveyed the need for her to consult with her physician. Check the effectiveness of your communication with a

simulated patient by asking for feedback on the impact of your communication.

H.C.C. -

1) How would you have communicated the need for an appointment to Mrs. Fine (under the same circumstances as related in the preceding incident)? Check the effectiveness of your communication with a simulated patient by asking for feedback on your communication.

2) How would you reschedule a missed appointment? If necessary, review General Procedures module.)

M.D. -

After examining Mrs. Fine and speaking with her would you continue with the same treatment program? If so, why? If not, why? How could you prevent a reoccurence of the described incident? To what would you change the program and on what basis?

Compare your answers with those found in the answer booklet.

7.0 EARLY DETECTION (H.C.C., D.D.S. and M.D.)

RELATED PERFORMANCE OBJECTIVES: #1,2,3.

As previously indicated diabetes cannot be prevented. However, its increased incidence in certain members of the population has been demonstrated. Thus, although it cannot be used as a preventative measure, those people who are more likely to become diabetic ("high risk") can be counselled about diabetes and its associated symptoms. If a person is familiar with these symptoms, they can recognize them at their onset and bring them to the attention of their physician, facilitating the identification of diabetes and its control.

Early detection of "high risk" people can be achieved by annual blood and urine tests. The results of these tests, when maintained in a person's medical and dental chart can provide a baseline measure enabling the health practitioner to identify significant changes.

The benefits of early detection of the asymptomatic diabetic have been disputed. For viewpoints favoring and against early detection and for information about (1) the methods used in early detection and (2) the epidemiology of diabetes, read the following references:

REFERENCES

M.D. & D.D.S. STUDENTS:	"Screening for Diabetes Mellitus", Glen W. McDonald and John B. Sullivan, Diabetes Mellitus: Diagnosis and Treatment, Vol. III, 1971, pp 95-99.
M.D. & D.D.S. STUDENTS:	"Oral Glucose Tolerance Tests", Holbrooke S. Seltzer, M.D. Diabetes Mellitus: Diagnosis and Treatment, Vol. III, 1971, pp 101-106.
M.D. & D.D.S. STUDENTS:	"The Intravenous Glucose Tolerance Test", J. Stuart Soeldner, M.D., Diabetes Mellitus: Diagnosis and Treatment, Vol. III, 1971, pp 107-114.
M.D. & D.D.S. STUDENTS:	"Effect of Age in Interpretation of Glucose and Tolbutamide Tolerance Tests, Reubin Andres, M.D., Diabetes Mellitus: Diagnosis and Treatment, Vol. III, 1971, pp 115-120.
H.C.C. STUDENTS:	"Epidemiology of Diabetes", Kelly M. West, M.D., Diabetes Mellitus: Diagnosis and Treatment, Vol. III, 1971, pp 121-128.

SELF-EVALUATION

M.D. -

Describe how you would counsel and advise 3 of the following high risk patients:

1) individuals who delivered babies weighing more than 9 pounds or have had pregnancies involving abortions, premature labor, stillbirths, or neonatal deaths.

2) individuals who are obese.

3) individuals with a family history of diabetes.

4) individual who themselves weighed more than 9 pounds at birth.

5) patients with transitory glycosuria or nondiagnostic hyperglycemia, especially during the course of pregnancy, surgical procedures, trauma, emotional stress, myocardial infarction, cerebrovascular accident, or administration of adrenal steroids.

6) patients with otherwise unexplained neuropathy, retinopathy, nephropathy, peripheral vascular disease, or coronary artery disease.

Evaluate your program by carrying it out in an interchange with a simulated patient. Review the interchange with the simulated patient to determine if you included the following in your discussion:

1) recognition of signs and symptoms of diabetes
2) benefits of early detection
3) conditions associated with diabetes

Did you elicit any concerns and/or questions the patient may have?

D.D.S. -

After familiarizing yourself with the people who have a high risk of becoming diabetic, design an early detection program that will enable you to monitor the results of the urine testing performed at your office. Review your program with your adviser.

N.C.C. -

1) Screen 30 patient charts and determine which people should be advised and counselled about diabetes and given annual blood and urine tests. Discuss your selection with your adviser.

2) Devise a system to "flag" these charts to facilitate early detection, and review your "system" with your adviser.

8.0 ASSESSING OUTCOMES (N.C.C, D.D.S, M.D.)

RELATED PERFORMANCE OBJECTIVES: #36

This section of the study guide is intended to help you learn how

to assess the results of your management of diabetic patients systematically. The goal is to sharpen your skills in evaluating what you do as a primary care provider. To attain this goal, you will need to learn how to set specific patient care criteria which becomes the yardstick required to answer the question of "How well did I carry out my patient care responsibilities with my diabetic patients?"

To assist you with the task of setting patient care criteria, you may need to review the "Medical Audit Module." If you have not completed the Audit Module yet, you are likely to have some difficulty in generating specific criteria. If this is the case, be sure to check with your adviser after having attempted an initial set of patient care criteria.

SELF-EVALUATION

D.D.S. and M.D. -

1) Develop a complete set of patient care criteria which you would use to evaluate your management for Mrs. Fine.

2) What criteria would you add or revise for assessing your performance with juvenile diabetic patients ?

3) What change in specific criteria would you make for geriatric diabetic patients?

After you have completed the above, check with your adviser for feedback on your patient care criteria. Your adviser will arrange a group session where several sets of criteria will be compared in an attempt at gaining answers.

D.D.S., M.D. and N.C.C. -

When your criteria have been approved discuss them in a team meeting. Develop a data abstract sheet to extract the information from charts.

N.C.C. -

Randomly select 10 charts of diabetic patients from the clinical unit files, abstract the data, and then ask an M.D. and D.D.S. student to abstract the same charts. (The charts contain medical and dental sections.) Compare each other's results and clarify misunderstandings at a team meeting.

9.0 OTHER ILLUSTRATIVE PATIENTS (H.C.C, D.D.S, M.D.)

This section of the diabetes module is intended to provide you with additional practice in applying what you've learned in the previous sections. Additional patient presentations in the form of copies of patient charts are presented. Relevant slides will accompany the charts. The following patient presentations represent some of the different types of diabetic patients which will be found in the charts:

PATIENT #1 - James Joyce, 40 years old, taxi driver in San Francisco. Married, two children 10 and 8. Insulin dependent. A brittle diabetic for the past 10 years. Chronic control problems.

PATIENT #2 - Alice Rogers, 16 years old, high school junior. Father is a college instructor, mother is a housewife. No other children. Alice is concerned that she may have diabetes since she recently read an article about the early signs and symptoms.

The H.C.C. students will be directed to identify gaps in the standard data base for each patient, and indicate areas in the management where they appropriately would have a role and specify the specific responsibilities they would accept. Medical students will direct their attention to obtaining a differential diagnosis where applicable, developing an appropriate management plan and identifying problems both associated and unrelated to diabetes which may impede successful patient outcomes. Dental students will direct their attention to recognizing signs and symptoms suggestive of diabetes, and identifying needed modification in dental treatment plans.

Each chart is accompanied by a booklet containing the answers to the different questions specified for each student. If there are any problems or questions consult with the adviser.

10.0 ADVANCED WORK

H.C.C., D.D.S. and M.D. -

The PMC Diabetes Clinic meets Thursday mornings in the out-patient department. If you wish additional experience in learning about the management of diabetic patients, telephone __________ at ________ who will arrange this for you.

M.D. -

Dr. ________ is studying circulating insulin levels of various kinds of diabetics. His patients are seen regularly in the Clinical Research Center at PMC. Student assistance in his study can be arranged by telephoning ______ .

M.D. -

Dr. ____________ is continuing his investigation of the role of somatostatin in diabetes. Further information can be obtained by telephoning ______ .

D.D.S. -

Dr. ___________ is studying the role of diabetic microangiopathy in the pathogenesis of periodontal disease. Telephone _____ for further information.

H.C.C. -

Dr. ___________ is studying diabetic control in relation to patient compliance. Telephone ______ for further information. Student participation is invited.

11.0 POST-TEST (N.C.C,D.D.S,M.D.)

The post test will consist of several different types of evaluation which will enable you to demonstrate your competencies in the skills and knowledge necessary to diagnosis and manage diabetes millitus. The evaluation formats will be discussed briefly, including the purpose for each category of health professional student.

(A) Multiple Choice Tests

These will be fairly standard in format and will be familiar to almost all students. In most cases, a stem sentence will be presented and the student will be asked to select one of four or five proposed answers. While all or most of the answers may be plausible, the student is asked to select the best answer. Occasionally these will be true or false or matching questions.

D.D.S. and M.D. Students -

These tests will assess the student's ability to recall knowledge of diabetes including the sciences basic to an understanding of the pathophysiology of diabetes (anatomy, physiology, pathology).

N.C.C. Students -

The multiple choice tests for N.C.C. students will also assess the student's basic science knowledge at the level required of the N.C.C. It will also include questions related to laboratory tests and procedures.

(B) Simulated Patients

N.C.C., D.D.S. & M.D. Students -

Students will be asked to demonstrate their communication skills with three simulated patients. This implies obtaining the parts of the standard data base for which they are responsible, communicating the treatment plans and obtaining compliance.

(C) Written Case Histories

These will be presented to M.D. and D.D.S. students. The former will then be asked to devise detailed management plans for each patient. The D.D.S. student will be asked to integrate the patient's therapy for diabetes with his proposed treatment plan for a dental condition

(D) Patient Management Problems (PMP's) and Computer Aided Simulation of the Clinical Encounter (CASE)

The PMP is a technique in which the student requests information and receives immediate feedback. It measures the way in which a student approaches a problem.

CASE is similar, but the student interacts directly with the computer. Both will be utilised mainly for medical and dental students to evaluate their problem solving skills in diabetes.

(E) Case Study Problems

For an example of this format please refer to the Obesity study guide "Post Test" section. M.D. and D.D.S. students will experience this format to assess their ability to utilize information appropriately in the handling of problems related to diabetes.

(F) Auditing

M.D. and D.D.S. students will be required to present their criteria for the care of diabetic patients. The N.C.C. student will be required to design appropriate abstract sheets and abstract sample records. Both the M.D. and D.D.S. students will be required to devise corrective plans after receiving audit data.

(G) Clinical Unit Patients

M.D. and D.D.S. students will be asked to develop a management plan for three different patients. Each management plan will be reviewed with the adviser. The students will be asked to communicate the plans to each patient while being observed by his adviser and/or clinical unit faculty members. N.C.C. students will be asked to participate in the design of the management plan with respect to patient education and compliance. N.C.C. students will also be asked to contact three patients who have missed their clinic appointments (after familiarizing themselves with the patient's charts).

(H) Team Evaluation

A team of students (N.C.C., D.D.S. and M.D.) who have been working together on the diabetes module will be asked to conduct a team conference for one of the three clinical unit patients selected in part G of the

Post Test. The team will be observed and evaluated by clinical unit faculty reprenenting each of the three health professions; M.C.C., D.D.S. and M.D. Some of the areas the team will be evaluated on include the rationale for having a conference, the presentation and organization of the meeting and communication skills.

APPENDIX 1-C

(CITED IN CHAP. 2, VOL. I)

HYPERTENSION STUDY GUIDE

THE SCHOOL OF HEALTH PROFESSIONS FEASIBILITY STUDY
THE UNIVERSITY OF THE PACIFIC
PACIFIC MEDICAL CENTER
P.O. BOX 7999
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AUGUST, 1974

Hypertension Study Guide

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HYPERTENSION STUDY GUIDE

Explanation

- THIS STUDY GUIDE ILLUSTRATES THE CURRICULAR METHOD THAT WILL BE USED BY STUDENTS OF THE SCHOOL OF HEALTH PROFESSIONS TO LEARN HOW TO PREVENT AND RESOLVE HIGH-PRIORITY HEALTH CARE PROBLEMS. USING THIS STUDY GUIDE AS A PROTOTYPE, MODULES WILL BE DEVELOPED FOR THE HEALTH CARE PROBLEMS SEEN MOST OFTEN IN AMBULATORY CARE. THESE WILL COMPRISE MUCH OF THE FINAL CURRICULUM. THE VARYING LENGTHS AND DIFFERING EMPHASES WILL REFLECT THE UNIQUE NATURE OF EACH PROBLEM AND ITS MANAGEMENT.
- IN THE DEVELOPMENT OF THESE MODULES (ESSENTIALLY A "PACKAGE" OF LEARNING EXPERIENCES, REFERENCE MATERIALS AND SELF-EVALUATIONS) CONTENT EXPERTS SERVE AS DIRECT RESOURCES. CONTENT EXPERTS ARE PRACTITIONERS, OTHER HEALTH PROFESSIONALS, CLINICIANS, AND BASIC SCIENTISTS WHOSE EXPERIENCES WITH THESE PROBLEMS BECOMES INTEGRATED INTO THE MODULE. STUDENT CRITIQUES ARE ALSO USED IN THE DEVELOPMENT.
- IN ORDER TO DEVELOP THIS STUDY GUIDE, THE TASKS NEEDED TO RECOGNIZE AND MANAGE PATIENTS WITH HYPERTENSION WERE ANALYZED FOR THREE HEALTH PROFESSIONAL CATEGORIES; HEALTH CARE COORDINATOR, DENTIST, AND PHYSICIAN. PERFORMANCE OBJECTIVES WERE DESIGNED WHICH PROVIDE A GUIDE FOR ASSESSING STUDENTS' COMPETENCE.
- IT IS IMPORTANT TO REMEMBER THAT THIS STUDY GUIDE SERVES ONLY AS A GUIDE TO THE MODULE. TO COMPLETE THE MODULE THE STUDENT MUST DEMONSTRATE COMPETENCE IN THE RELATED PERFORMANCE OBJECTIVES.
- REFERENCES ARE REFERRED TO BY NUMBER IN THE TEXT. AT THE END OF THE STUDY GUIDE IS A COMPLETE LISTING OF ALL REFERENCES AND THE CORRESPONDING NUMBER USED IN THE TEXT.
- THE ASSUMPTION IS MADE THAT ALL MATERIALS AND APPARATUS MENTIONED WILL BE AVAILABLE TO THE STUDENT.

HYPERTENSION STUDY GUIDE

Table of Contents

		Page	M.D.	D.D.S.	H.C.C.
1.0	Introduction	1	*	*	*
2.0	Glossary	3	*	*	*
3.0	Performance Objectives/Tasks	5a	*	*	*
4.0	Prerequisites	6	*	*	*
5.0	Hypertension and Its Complications	7	*	*	*
5.1	Hypertension or Not?	7	*	*	*
5.11	Primary Blood Pressure Screening	7	*	*	*
5.111	Creating Primary Blood Pressure Screening Systems	8	*	*	*
5.112	Primary Screening of High Risk Patients by Dentists	9		*	*
5.113	Technique of Obtaining Accurate Blood Pressure Readings	10	*	*	*
5.114	Recommendations Following Primary Blood Pressure Screening	11	*	*	*
5.115	Follow-through of Primary Screening Recommendations	12			*
5.12	Secondary Blood Pressure Screening	12	*	*	*
5.121	Recommendations Following Secondary Screening	13	*		
5.13	Review	14	*	*	*
5.2	Treatment or Not?	15	*		*
5.21	Minimal Data Base	15	*		*
5.22	Patient Presentation	16	*	*	*
5.23	Drug Therapy and Pharmacology	17	*		
5.24	Other Modes of Therapy	18	*		
5.25	Hypertension and Dental Management Plans	19		*	
5.26	Pathophysiology and Natural History of Hypertension	20	*		
5.27	Hypertensive Crisis	21	*		
5.28	Screening for Known (Secondary) Causes of Hypertension	22	*		
5.29	Management Plans	23	*		
5.3	Treatment Adequate or Not?	25	*		*
5.31	Patient Education	25			*
5.311	Teaching Patients How to Take Their Blood Pressure	28	*		*

Table of Contents - Continued

		Page	M.D.	D.D.S.	H.C.C.
5.32	Patient Compliance	28	*		*
5.33	Monitoring of Hypertensive Patient Care	29	*		*
5.331	Monitoring Individual Patients	30	*		*
5.332	Monitoring the System of Hypertension Care.	31	*		*
5.3321	Criteria and Standard Setting	31	*		
5.3322	Evaluating Performance by Abstracting Records	31			*
5.3323	Creating Educational Programs to Correct Defieiencies	32	*		
6.0	Advanced Work	33	*	*	*
6.1	Community Action	33	*	*	*
6.2	Clinical Studies	34	*		
6.3	Patient Presentations	34	*	*	*
7.0	Post Test	34	*	*	*

1.0 INTRODUCTION

We have known that "high blood pressure" (i.e., hypertension) is an important health problem, but only recently have we begun to realise just how important it is.

We know now that even small elevations of blood pressure are associated with increased risks of subsequent development of a stroke, kidney failure, congestive heart failure or other cardiovascular complication. We also know now that rather simple measures will control the vast majority of elevated blood pressures and that this control will materially decrease the risks of complications of hypertension. Thus, by applying all we know about hypertension we can have a significant impact on this serious national health problem.

The magnitude of the problem is reflected by its incidence - twenty-three million of the more than 200 million people in the U.S. (i.e., approximately 11.5%) have significant hypertension. Of these 23 million people, only one-half (11.5 million) are aware that they have hypertension. Of those who know they have hypertension, only half (5.75 million) are receiving any therapy for their hypertension. Of those receiving therapy, only half (2.87 million) are receiving therapy adequate to control their hypertension. Think of it - only one out of eight people with hypertension is receiving the full benefit of our present-day knowledge which, if applied, would decrease his chances of suffering serious illness and prolong his life!

Blood pressure readings often provide the only warning signal to the health care professional and the patient that the blood pressure is elevated; the patient usually experiences no overt symptoms. When obtaining a blood pressure, two recordings are noted. The first, or higher, is called the systolic blood pressure and the second, or lower, is called the diastolic blood pressure. You will learn how to obtain and record these pressures as well as their physiologic explanations. This study guide stresses the importance of the diastolic blood pressure reading over the systolic reading. This is so because almost all of our present-day knowledge concerning hypertension is based upon data solely dependent on diastolic blood pressure recordings. Students should be aware, however, that recent work indicates a similar role might be played by the systolic blood pressure in respect to risk of complications and their control. Thus, in the near future decisions concerning hypertension may be based upon systolic readings as well.

Finally it should be noted that the vast majority of people with hypertension have no known causes for their hypertension. Those people are designated as having primary or essential hypertension and their diagnosis and management constitutes the bulk of this study guide. Despite this emphasis, steps are outlined to assure that those people likely to have a known cause of hypertension (i.e., instances of secondary hypertension) undergo appropriate screening tests.

The structure of this study guide is based upon the three questions implied above, i.e., (1) Who has hypertension? (2) Who is receiving therapy for his hypertension? and (3) Who is receiving therapy adequate to provide long term control of his hypertension?

Before you begin the study guide you should study the terms in the glossary (2.0) and pay special attention to the definitions of two terms, viz., "primary blood pressure screening" and "secondary blood pressure screening." Since much of our knowledge of hypertension is fairly recent, terminology has changed. Therefore, your reading of the references should be assisted by your familiarity with all the terms in the glossary.

2.0 GLOSSARY

The following terms are defined here because of their unique meaning in relation to this study guide. Each term may have more variability than implied by the definitions below. Terms that are new to you but not listed below should be checked in a medical dictionary.

Hypertension - The presence of a sustained (i.e. on 2 to 6 recordings) diastolic blood pressure greater than 90 mm Hg.

Primary Hypertension - Hypertension due to no known cause.

Essential Hypertension - Same as Primary Hypertension.

Secondary Hypertension - Hypertension due to a known cause such as a renal arterial lesion (renovascular), adrenal tumor (primary aldosteronism), chromaffin tissue tumor (pheochromocytonia), etc.

Mild Hypertension - Sustained diastolic blood pressure between 90 and 120 mm Hg.

Moderate Hypertension - Sustained diastolic blood pressure between 120 and 140 mm Hg.

Malignant Hypertension - A general term connoting a pressure ⟩ 140 mm Hg and often accompanied by signs of organ changes due to hypertension such as congestive heart failure, papilledema, stroke, renal failure, etc. and by rapid clinical deterioration. Considered to be an accelerated form of hypertension.

Benign Hypertension - Same as mild essential hypertension.

Primary Blood Pressure Screening - A single blood pressure recording obtained on a person who has not had such measurement during the past year.

Secondary Blood Pressure Screening - A series of visits (preferably 3) during each of which patients with elevated blood pressures at primary screening have at least two blood pressure recordings obtained while they are at rest.

Minimum Data Base (M.D.B.) - for hypertensive patients.

These are a combination of parts of the standard data base (S.D.B.) and other data. Together they constitute the minimal data required to make the essential decisions about the care of a hypertensive patient. The M.D.B. includes:

Historical Data:

Hypertension - Number of prior episodes, duration, severity, therapy, etc.

Complications - Cardiac or renal disease, stroke.

Family history of hypertension and its complications.

Physical Examination Data:

Height and weight (obesity).

Organ Changes:

Heart Failure - heart size, neck vein distension, liver size, rales, precordial heave, or gallop and periplural edema.

Stroke - neurologic signs of stroke.

Blood vessels - funduscopy.

Secondary Hypertension - abdominal bruits and masses.

Laboratory Data:

Associated conditions - Blood sugar following a standard glucose load; serum cholesterol and lipids; urinalysis for glucose and hemoglobin

Organ Changes - Chest X-ray; resting electrodardiogram; urinalysis for protein, cells and casts; serum creatinine (preferred) or B.U.N.

Drug Therapy - Serum potassium; serum uric acid.

3.0 PERFORMANCE OBJECTIVES-TASKS

		Performance Objectives	Related to Task(s) #
N.C.C. M.D. D.D.S.	1.	Given 20 patients whose blood pressure has not been recorded during the past year the student should be successful in causing at least 16 such patients to undergo primary blood pressure screening. The primary screening may occur by the student taking and recording the blood pressure himself or by making sure the patient undergoes the screening via someone else. This implies that the student will be able to convince the patients of the importance of blood pressure screening, to arrange to have the necessary equipment present to take blood pressures or to make the arrangements necessary to have the patients blood pressure taken at another place or time.	1 and 3
D.D.S.	2.	Given 100 randomly selected patients from whom the student has obtained a data base, the student will correctly identify at least 90% of those at increased risk for hypertension according to factors such as age, sex, race, obesity, family history, lipid abnormality, etc.	2
D.D.S.	3.	Given a team dental care unit the student will be able to design a feasible primary blood pressure screening program including mechanisms to audit the system's performance.	
N.C.C. M.D. D.D.S.	4.	Given the blood pressure recordings of 20 patients at primary screening, the student will be able to designate an appropriate follow-up action in 90% of instances. Appropriate follow-up means the following: systolic blood pressure 170 and diastolic blood pressure 95 mmHg annual rescreening; systolic blood pressure 160 or diastolic blood pressure 95 mmHg secondary screening; diastolic blood pressure 120 mmHg immediate referral to source of medical care.	1
M.D.	5.	Given 10 simulated patients the student should be able to recognize correctly those in hypertensive crisis (i.e. accelerated hypertension) by the presence of any of the following: Papilledema, renal insufficiency, mental aberrations, or extremely high diastolic blood pressure (e.g.140mmHg).	
N.C.C.	6.	The student should be successful in having 16 of 20 patients comply with the recommended follow-up action of primary and secondary blood pressure screening. This implies that the student will be able to communicate with the patient effectively enough to assure that the patient understands and accepts the importance of following the recommendation, checking to see whether the patient followed through, discussing reasons for non-compliance with the non-complying patient, reminding patients of their appointment, etc.	1 and 3
N.C.C. M.D. D.D.S.	7.	The student should be able to determine and record the systolic and diastolic (change and disappearance of sound) blood pressure in one upper and one lower extremity within an accuracy of ± 5 mmHg of that predetermined by an "expert" in 9 out of 10 patients (real or simulated) of varying age, sex and weight.	3
M.D.	[illegible].	The student should be able to make appropriate recommendations for at least 18 out of 20 patients (real or simulated) based upon their blood pressure recordings at secondary screening. Appropriate recommendations imply: - a) annual rescreening for diastolic blood pressure 95; b) further observation and individualization for idastolic blood pressure 95 to 105 or c) low dose stepped-up drug therapy for diastolic blood pressure 105 to 120 and d) high dose stepped-up drug therapy for diastolic blood pressure 120 mmHg.	4 and 5
N.C.C.	9.	The student should be able to gather and record accurately the following parts of the minimal data base for 9 out of 10 real or simulated hypertensive patients: a) presence or absence of history of hypertension or its treatment, of cardiac or renal disease, of stroke. b) presence or absence of other cardiovascular risk factors such as diabetes, cigarette smoking, lipid abnormalities, or family history of hypertension or its complications. c) height and weight d) urinalysis for protein, hemoglobin and glucose (dipstick). e) resting electrocardiogram f) serum creatinine g) blood sugar (fasting or following standard glucose load) h) serum cholesterol i) serum potassium j) chest X-ray k) serum uric acid l) blood pressure recording lying and standing - preferrably 6 during 3 visits.	2 and
M.D.	10.	The student should be able to gather and record accurately the following parts of the minimal data base for 9 out 10 hypertensive patients: a) funduscopic examination b) presence or absence of neck vein distension, auscultatory lung signs of cardiac failure, heart size enlargement, precordial heave, murmurs, arhythmia and gallop. c) presence or absence of abdominal masses or bruits, peripheral and neurologic deficits associated with stroke. d) presence, magnitude or absence of femoral pulses.	6
M.D.	11.	Given the minimal data base on 10 patients (real or simulated) of varying age and sex, the student will be able to discriminate correctly in 8 patients between those who do and do not warrant tests to screen for specific secondary causes of hypertension. For those patients to be screened the student will obtain a rapid dose intravenous pyelogram and 24 hour urine specimen for varylmandelic acid (VMA). The student should be able to explain the reason for each test and how hypertension occurs in each of the conditions being screened for. Finally, the student should refer any patient who has an abnormal screening test to a pediatrician if below 17 years of age or an internist if 17 years of age or older.	4

			Tasks
M.D.	12.	The student should be able to describe the relationship of any abnormality in the minimal data base to the pathophysiologic natural history of hypertension in 8 out of 10 patients. (Example - relate funduscopic abnormalties and/or congestive heart failure to the probable length and severity of the hypertension). The student should also be able to list the major dangers of uncontrolled hypertension.	
M.D.	13.	The student should be able to convey the following information so that it is understood by 4 out of 5 patients (real or simulated) requiring drug therapy: a) the patient's blood pressure level b) the patient's major risk factors for hypertension c) major reasons for treating the hypertension d) the major components of his management plan e) the likely side effects and duration of drug treatment f) the need to draw up a mutual "contract" of expectations. g) a probable schedule of required future visits for control and maintenance. h) the implications the management plan might have on the patient's life style.	12 and
N.C.C. M.D.	14.	Given 10 patients or family members who are to learn to take their own or another's blood pressure, the student will be able to teach 9 of them to do so correctly within 2 hours of instruction time.	14
M.D.	15.	Given the minimal data base the student will be able to formulate management plans appropriate for at least 18 out of 20 hypertensive patients (real or simulated). Such a plan must indicate the major side effects, pharmacologic action, and drug incompatibilities for each drug chosen. All birth control pills should be discontinued as a primary step of management plan.	7,8,9 and 10
D.D.S.	16.	Given 20 case records of hypertensive patients the student should formulate a dental management plan appropriate for procedures and the patient's hypertension therapy: a) tooth extraction b) pre-operative sedation c) local anesthetic d) dental or periodontal abscess	16,17 and 1
N.C.C.	17.	Given 10 hypertensive patients (real or simulated) who have missed one or more appointments, the student should be able to cause 7 of them to keep their next appointment. This implies being able to communicate his concern for the patient, to elicit reason(s) for the missed appointment, to refer the patient to someone else if necessary, and to remind them of their next appointment.	

			Tasks
M.D.	18.	Given a series of 20 case records of hypertension, the student should be able to create criteria and standards of care which in 95% of instances would discover: a) those who did and those who did not have blood pressure recorded b) those who did not receive drug treatment but should have c) those who did receive drug treatment and of these: 1) those who should not have 2) those whose dose and frequency was not appropriate 3) those whose blood pressure response was not appropriate 4) those whose follow-up was not adequate 5) those with side effects noted	11
N.C.C.	19.	Given criteria for the care of hypertensive patients, the student should be able to construct a data abstract sheet and abstract the data needed to measure correctly compliance with the criteria in 19 of 20 case records.	
N.C.C.	20.	Given hypertensive patients requiring therapy for whom he has assumed some responsibility, the student should have been successful in gaining satisfactory control of the blood pressure (e.g. diastolic $\leq$ 90mmHg with no major drug side effects) within 6 months of discovery of the hypertension in 80% of instances. This implies effective communication skills, appointment arranging, empathy and mutual goal setting. Special skills are implied in effective communication in team meetings.	15

Tasks*

1. Deciding whether a patient should be referred due to high blood pressure readings.

2. Preparing patient's chart for attention of physician with purpose of visit and need for routine screening tests and/or attention to hypertension by asking predetermined questions with specific reference to heart attack, other heart disease, high blood pressure, stroke, diabetes, kidney disease, gout, cirrhosis and liver disease.

3. Measure and record blood pressure

4. Diagnosing any adult patient for hypertension; distinguishing between essential and secondary causes of hypertension; deciding whether to go ahead with treatment planning by taking history (with special attention to history of hematuria or a family history or renal disease or hypertension) physical exam (with special attention to optic fundus, symptoms of pheochromocytoma, blood pressure, vital signs) and laboratory tests, when appropriate, (including serum thyroxin, appropriate blood tests, arteriogram and/or rapid-sequence urogram or radio isotope renogram); evaluating results; determining whether to refer to hospital, order additional tests or begin treatment.

5. Referring all hypertensive non-adult patients for screening of secondary causes of hypertension

6. Taking or ordering of electrocardiogram (ECG) of any patient as ordered or determined.

7. Planning a drug treatment program for hypertension for any adult patient by explaining hypertension, administering a thiazide-type diuretic, adding as needed reserpine, methyldopa, hydralazine, then adding as needed hydralazine or if that has already been added, methylodopa.

8. Planning a non-drug treatment program for any adult patient by explaining hypertension, formulating a regimen based on moderate sodium intake, moderate exercise, weight control and smoking and cholesterol restriction.

9. Determine or modify treatment plan for patient with pre-existing chronic cardiovascular disease.

10. Determine or modify treatment plan for hypertensive patient with obesity.

11. Plan and carry out a monitoring program for a patient with hypertension including scheduling patient when medication is at peak action; eliciting and using patient complaints of side effects to modify treatment plan, determining if the patient is following the drug therapy or if the patient is becoming resistant to treatment; and ordering or performing yearly EKG, urinalysis, BUN or creatinine, blood sugar, serum cholesterol, funduscopic, serum potassium and other tests as necessary.

12. Instruct patient on name of drug(s), proper dosage, frequency of medication and possible side effects. Encourage patient to disclose every side effect he experiences and to bring medication to the office during visits.

13. Discuss with patient the treatment goals and obstacles in terms of the changes in his behavior that may be necessary.

14. Instruct patient in taking his own blood pressure and recording results as one way of providing the patient with feedback re: his progress and giving him an active role in the treatment plan.

15. Monitor patient's blood pressure graphically and illustrate where level is in relation to his last visit.

16. Administer parenteral medication in the instance of an acutely high blood pressure in a hypertensive patient during anesthesia.

17. Assess patient's hypertensive status and treatment regimen to decide advisability of administering anesthesia or performing dental work.

18. Administering adequate sedation to prevent adverse systemic responses in a patient with hypertension during dental treatment.

19. Take a history of the drugs the dental patient who is hypertensive is receiving.

4.0 PREREQUISITES

The major prerequisites are the following:

N.C.C. - Completion of the "General Procedures" study guide. Proficiencies in this area includes general skills in obtaining parts of the standard data base such as historical information, chart preparation, height, weight and blood pressure and laboratory data.

D.D.S. - Competence in history taking. Some general knowledge about local and general anesthetics, analgesics, gingival packing and tooth extraction helpful but not essential.

M.D. - Competence in history taking and physical examination skills with particular attention to funduscopy, auscultation for bruits, and detection of cardiac murmurs, precordial heave, rales, heart size, liver size, neck vein distension, abdominal masses and neurologic deficits associated with stroke.

In addition, basic interviewing skills are necessary for the M.D. and D.D.S. student. Effective management of the problems associated with hypertension requires good communications between the practitioner and the patient or other practitioners. Usually patients with hypertension have no symptoms referable to their hypertension and, therefore, they might find it difficult to appreciate the benefits of taking their medications especially when the medications may produce undesirable side effects. Thus merely prescribing medications will not be generally effective without taking additional steps to support patient compliance.

Whenever you and your adviser believe you are ready to be certified in this problem area, you may request such evaluation as indicated in the section on Post-Test (7.0).

5.0 HYPERTENSION AND ITS COMPLICATIONS

N.C.C.
M.D.
D.D.S.

Before beginning your study of hypertension, it would be well to consider the implications of such a diagnosis on a patient's life. For many it means a life-long regimen of drug therapy, weight loss and exercise. Patient compliance with such prescriptions is not very likely unless the health providers are convinced that the proper management of the problem has a "payoff" for the patient that far exceeds the "cost" (i.e. dollars, time, inconvenience, side effects, etc.). Therefore, you should read the following references to get a general view of the importance of proper management of hypertension. The references will also relate the general facts about the epidemiology and risk factors associated with hypertension.

References:

A. - No. 1, pgs. A-1 through A-6
B. - No. 2, pgs. 7-10
C. - No. 3, pgs. 13-18
D. - No. 4, pgs. 51-56, B-1 - B-5
E. - No. 5, pgs. 3-11
F. - No. 8, pgs. 1647-48

5.1 Hypertension or not?

N.C.C.
M.D.
D.D.S.

The dictum "rational therapy requires rational diagnosis" is as true for hypertension as any other condition. The first steps in diagnosis require that people have blood pressure recordings periodically and that those with elevated pressures are followed up for verification and subsequent management. Such a process implies screening mechanisms.

5.11 Primary Blood Pressure Screening

N.C.C.
M.D.
D.D.S.

Everyone should have his blood pressure taken and recorded yearly. Any organized mechanism for bringing this about is called a primary blood pressure screening. The fact that only one-half of those with hypertension are aware of their hypertension indicates our present methods for detecting hypertension are deficient. With this thought in mind, let us examine the problems of screening.

5.111 Creating Primary Blood Pressure Screening Systems

N.C.C.
M.D.
D.D.S.

Presume for the moment that you will be working in the situations outlined below. For each situation, given your role, outline what you think you might be able to do in creating a system of primary blood pressure screening. The steps you outline should not include "outreach" activities but rather you should concentrate on those patients who already are part of the health [illegible] delivery system in which you work. The section on Advanced Work (6.0) deals with "outreach" activities and their attendant problems.

N.C.C.

A. for a solo rural practitioner (physician or dentist)
B. in a large urban fee-for-service group practice (medical or dental)
C. in a moderate size prepayment group organization (medical or dental)

D.D.S.

A. in solo rural practice
B. in solo urban practice
C. in a large dental school clinic
D. in a moderate size prepayment group practice

M.D.

A. in solo suburban practice
B. in solo urban practice
C. in a moderate size fee-for-service group practice
D. in a large prepayment group practice

Self-Evaluation

When you have finished the task noted above, read the following references and check your answers against them. After you read the references, revise your answers, if appropriate, and show your revised list to your adviser who will arrange further feedback.

References:

A. - No. 1, pgs. 3-5, A-1 through A-8
B. - No. 2, pgs. 25-27
C. - No. 3, pgs. 3-8

*N.B. We have adopted 160/90 rather than 160/95 as the maximal level not requiring secondary screening.

Now you should know what hypertension is and some of the major problems concerning its discovery. You should also know that discovering hypertension is neither simple nor sufficient. Following primary screening, good decisions are necessary and the patient must carry them out. This implies that patients must understand these decisions and their implications. All of this holds true for secondary screening as well.

5.112 Primary Screening of High Risk Patients by Dentists

D.D.S.
N.C.C.

As a practicing dentist you will take care of a large number of people who have hypertension. You have already been asked to give some thought to devising primary screening mechanisms in section 5.111 of this study guide. As long as human beings are involved in a system, the system will never be constantly perfect. This implies that no primary blood pressure screening system is likely to discover all patients with hypertension. In view of this, your attention is now drawn to devising primary screening mechanisms that will at least screen those who are most likely (i.e. at highest risk) to develop hypertension.

To accomplish the above, you should go through two steps. First devise a means by which you can identify patients in your practice who are at increased risk of developing hypertension. Check your thoughts out with a fellow D.D.S. student. Then ask your adviser for a random sample of 100 dental records and he will arrange for a N.C.C. student to abstract these records and present you with the summary data to see if your system satisfactorily identifies high risk patients. Your adviser has data against which you can compare your results.

Once your mechanism of identifying high risk patients meets the minimal standards noted above, you should now devise the second part of your system - namely how to assure that all identified high risk patients who have not had a blood pressure recorded within the past year have this performed regularly. Once you have finished, show your plan to your adviser for feedback. Feedback may occur on a one to one basis or he may be able to arrange a small group discussion with other D.D.S. students concerning all of your respective plans.

The references listed below indicate those patients who are at increased risk of developing hypertension. Some of you may wish to develop your plans before reading the references and then revise the plans after reading the references. In any case it is advisable to read the references before you hand in your plans to your adviser.

References:

A. - No. 1, top of page 9

B. - No. 3, pgs. B-1 - B-6

C. - No. 5, pgs. 11-15

D. - No. 6

E. - No. 19, pgs. 563-567

5.113 Techniques of Obtaining Accurate Blood Pressure Readings

H.C.C.
M.D.
D.D.S.

Pages 47-52 and 55-60 of Reference No. 5 contain an overall description of how to obtain accurate blood pressure readings. For our purpose we define the diastolic blood pressure as that at which the sounds disappear. In most people there will be a pressure above this level at which the quality of the sounds changes perceptably. If this level is more than 5 mm Hg above that at which the sounds disappear, you should record both levels (e.g. 135/100-92). In a few patients the sound never disappears down to zero. In such instances you would record two pressures (e.g. 135/90-0) and would use the level at which the sounds changed as representing the diastolic pressure.

If you have not already been certified in proper blood pressure techniques or if you wish to practice your skills, go to the learning

resource center where you can obtain a mercury sphygmomanometer and a stethoscope. Practice your technique on fellow students and when you are satisfied with your accuracy (i.e. by agreement with recordings obtained by your fellow students), ask your adviser to arrange for your certification.

5.114 Recommendations Following Primary Blood Pressure Screening

H.C.C.
M.D.
D.D.S.

A series of blood pressure recordings obtained at primary screening are listed below. In actual practice you will have to make decisions about what should happen to people with similar blood pressures. For each pressure listed, note which of the following you would recommend:

A) Annual Rescreening

B) Secondary Screening

C) Immediate Referral for Medical Care

1) 138/60-54	6) 110/50
2) 145/70-0	7) 140/88
3) 170/95	8) 105/65
4) 200/110	9) 130/90-84
5) 180/145-136	10) 166/80

Self-Evaluation

Check your recommendations for the patients listed above with those suggested in Reference No. 1, page 12.

After completing the above, contact your adviser who will arrange practice sessions (including feedback on your performance) with simulated patients. During these sessions it will be your task to ensure that each "patient" understands what his blood pressure level is and appreciates the importance of following your recommendations. Having read the references noted in preceding sections you should be able to point out at least the reasons for following the recommendations and the dangers of non-compliance. You can polish up these skills by role playing with some fellow students before you meet with the "patients" to be supplied by your adviser.

5.115 Follow-Through of Primary Screening Recommendations

H.C.C. Not all patients will comply with the recommendations made at primary screening. Primarily it will be the task of the H.C.C. to increase the number of complying patients. The thoroughness with which the steps in Section 5.114 are carried out clearly will be a major factor in gaining compliance. Beyond this, however, patients need to be reminded of their subsequent appointments whether it be for annual rescreening, secondary screening or immediate medical care. In terms of outcome it should be obvious that the recommendations noted in the previous sentence are listed in order of increasing priority. Thus, while all are important, the most effort should be directed at assuring immediate medical care and the least at assuring annual rescreening.

When reminding the patient of a subsequent appointment, the H.C.C. should check whether the patient appreciates the importance of the appointment. If the patient fails to show up, the H.C.C. would inform the M.D., contact the patient to elicit the reason(s) for the failure to keep the appointment, try to help the patient overcome the barriers to keeping a subsequent appointment and reschedule the appointment.

You might find it profitable to discuss possible reasons for non-compliance with fellow students or others and possibly role play a few situations. When you feel comfortable in this role, contact your adviser who will provide you with further experience with simulated patients and situations. During these sessions you will be given feedback on your performance.

5.12 Secondary Blood Pressure Screening

H.C.C.
M.D.
D.D.S.

If primary blood pressure screening was effective, all patients with blood pressure less than 160/90 would be returning yearly for rescreening, and all those whose blood pressure exceeded 160/90 would undergo some kind of subsequent screening. Of the latter group, those whose diastolic blood pressure exceeded 120 mm Hg would have received immediate medical care while those with diastolic pressures between 90 and 120 would undergo secondary screening.

In any event it is important to verify the sustained nature of an elevated blood pressure before labelling a person with a diagnosis of hypertension. Remember that such a label may interfere with a person's insurability, job opportunities or life style. In many instances it may lead to a prospect of taking drugs for the remainder of his life.

Thus, the purpose of secondary screening is to verify the presence or absence of sustained elevated blood pressure. Ideally this should occur over a series of three visits during each of which at least two blood pressure recordings at rest would be obtained. The average of these six readings would constitute the blood pressure level on which subsequent major management decisions would be made. Often these ideal conditions cannot be met and compromises must be made. In view of its long term and severe implications, however, such compromises concerning hypertension should be limited as much as possible.

5.121 Recommendations Following Secondary Screening

M.D. The following blood pressures each represent the average pressure for an individual at secondary screening. With no information other than the blood pressure, in each instance note whether your recommendation would be:

A) Annual Rescreening
B) Observe and Individualize
C) Drug Therapy
D) Immediate Referral to an Internist or Pediatrician

1) 150/90
2) 180/110-104
3) 148/105-98
4) 105/80
5) 210/150
6) 148/84
7) 160/100
8) 160/135
9) 155/98
10) 172/118-112

Self-Evaluation

Check your answers for the above with the recommendations outlined in Reference No. 1, page 12.

It is important to remember that simply making recommendations is not sufficient. The patient must be willing to carry them out. This implies that they must understand what their blood pressure level is and what risks they face if they do or do not follow your recommendations. Your adviser will supply you with written vignettes, each of which will contain information about a patient, including his blood pressure, his lifesty[illegible] and his circumstances. By utilizing fellow students you can take turns role-playing the M.D. and the patient. It will be your task to convince the "patient" to follow your recommendations. At the conclusion of each role-playing episode, you should give each other feedback on your performance.

After you have practiced these skills in "convincing" patients to follow recommendations, contact your adviser who will supply you with simulated patients with whom you will further sharpen these skills. These simulated patients are instructed to give and are skillful in giving you feedback on your performance.

5.13 Review

Let us review some of the major points so far.

1) Primary blood pressure screening is essential if we are to discover all those with hypertension.

2) Secondary screening is essential to verify the sustained presence of hypertension owing to its long term implications to the patient.

3) Of all the chronic diseases facing man, hypertension is a prime example of one in which the patient must play an active role if health care is to make a significant contribution to his well being. This is so because the vast majority of patients with hypertension have no symptoms referable to their hypertension, they do not readily appreciate their future risks if untreated; they may develop annoying symptoms as a result of drug therapy for their hypertension and they probably will have to continue therapy for the rest of their lives. Thus, patient compliance is probably the single most important element in the control of known hypertension.

4) Decisions concerning the screening and diagnosis of hypertension are not complex and fall along a rather rational series of sequential steps.

5.2 Treatment of Not?

M.D.
H.C.C.

In deciding whether or not to treat a patient for hypertension, there are two troublesome areas. The first concerns those patients whose average diastolic blood pressure falls between 95 and 105 and the second concerns those whose diastolic blood pressure exceeds 140. Patients in the latter group are best dealt with by a secondary or tertiary care provider.

Initial data should be obtained to help make decisions about who needs and who does not need therapy. These data should also help the M.D. decide what kind of therapy is appropriate. Future decisions will be based in large part on the progression of the hypertension and its effects on organ systems in the human body. What follows, therefore, is a section which outlines those data minimally required to make rational decisions regarding hypertension and its management.

5.21 Minimal Data Base

H.C.C.
M.D.

The items comprising the minimal data base for hypertensive patients are listed in the Glossary (2.0). The section on performance objectives (3.0) indicates the collection of which items are the primary responsibility of the H.C.C. and those that are the primary responsibility of the M.D. If you are unclear about any item or wish to refresh your memory you should refer to the respective study guides on history taking, physical examination or laboratory tests.

Self-Evaluation

When you think you are ready, consult your adviser who will provide you with real or simulated "patients" from whom you will attempt to gather those parts of the minimal data base for which you are primarily responsible. For each "patient" there will be standards against which you can compare your findings for accuracy.

The following references describe the items in the minimal data base and some of the reasons for their inclusion:

References

A. - No. 1, pgs. 5-10
B. - No. 5, pgs. 67-69

5.22 Patient Presentation

M.D.
N.C.C.
D.D.S.

The following patient is presented here to exemplify some of the major problems confronting you in the case of patients with hypertension. Reference to and questions about this patient will occur throughout most of the remaining sections of this study guide.

Mr. Geoffrey Simmons is a 40-year-old black male who works as an executive in a small but growing business in the city. His blood pressure at primary screening one month ago was 168/105-98. He missed two appointments for secondary screening but finally and reluctantly appeared for two secondary screening appointments during which his average blood pressure was essentially the same as at primary screening. No major discrepancies were noted between his blood pressure readings in his arms and legs. The remainder of his minimal data base is within normal limits except that his mother died at age 44 of a "stroke" and his father is moderately limited physically at age 60 by "heart trouble" and "high blood pressure."

Mr. Simmons is married, has two children (Glen, age 17 and Myra, age 14) in good health. He has very high expectations for his children. He is the family's sole financial support and is a very active man - in his words, "constantly in motion." He worries a great deal and is a "perfectionist." He works long hours, rarely takes a vacation and is spending progressively less time with his family.

He describes his marriage as a happy one but has noted that he is the center of more and more family arguments lately.

He absolutely refuses to return for a third secondary screening visit and wants to know why so much fuss is being raised about his blood pressure when he doesn't even have any symptoms. He does not consider that the considerable fatigue he experiences at the end of each work day is abnormal.

5.23 Drug Therapy and Pharmacology

M.D.

Few health problems have benefited more from the development of new drugs than has hypertension. Previously, control of hypertension with drug therapy was difficult and often evanescent. Today there are very few instances in which satisfactory control by drug therapy is not possible.

Now picture Mr. Simmons, the patient presented in 5.22, sitting in your office. You know that certain antihypertensive drugs may be indicated for him while others may be contraindicated. Once you select a drug, you and Mr. Simmons should be aware of its major side effects so that you can minimize them. You will have to know the mode of action, the dosage, the frequency and route of administration and the steps of graded increases for each drug chosen. You will have to know when to combine the use of two drugs and finally how to monitor any drug therapy regimen you select.

Learning how to answer all of these questions may appear to be a monumental task. While not denying the inherent difficulties your task is made somewhat more manageable by the fact that there are only four major classes of drugs which should be in your required armamentarium. When you read the following references you should pay special attention to them. They are:

A) Thiazides or other antihypertensive diuretic
B) Reserpine
C) Methyldopa
D) Apresoline

In addition to these four, you should have some general knowledge of guanethidine and ganglioplegics which will be employed by specialists in the care of your patients with hypertension difficult to control.

When you finish reading these references you should be able to answer all the questions raised in this section.

References

A. - No. 1, pgs. 10, 11, 13-16
B. - No. 6

C. - No. 7

D. - No. 8

E. - No. 9, pgs. 227-240, 251-310, 759-764

F. - No. 10, pgs. 170-173, 425, 431, 577-579, 728-744, 854-858

NOTE: Thorough understanding of Reference F is critical.

5.24 Other Modes of Therapy

While drug therapy is the cornerstone of adequate control of most hypertension, other modes of therapy are important in their own right or in conjunction with drug therapy. This section is not intended to be an exhaustive review but rather to highlight the major modes of therapy.

Other than antihypertensive drugs, most therapeutic regimens are aimed at reducing general risk factors. This implies reducing or eliminating cigarette smoking, hyperlipidemia (including hypercholesterolemia), environmental stress and obesity. Of all these modes, two deserve special attention - namely diet and exercise. Loss of excess weight, moderate limitation of salt (sodium) intake and reduction of blood cholesterol can all be accomplished through diet. Rigid restriction of salt is extremely difficult owing to problems of food preparation, bland tasting foods, and prior ethnic food preferences. With the advent of diuretics, it is rarely necessary. Judicious use of exercise will increase the likelihood of desired weight loss and may have an independent salutory effect on morbidity and mortality by increasing cardiovascular tone. The effects of control of stress and smoking are difficult to assess and remain controversial.

Let us return to Mr. Simmons. What are you going to tell him about your recommendations other than drugs? Are there more questions you would like to ask him? Read the following references and then formulate a general plan of management for Mr. Simmons, including further information you need. Show your plan to your adviser who will arrange for you to receive feedback on a one-to-one basis or in a small group of fellow medical students.

D.D.S.

References

A. - No. 5, pgs. 85-87

B. - No. 9, pgs. 99-109

C. - Obesity Study Guide

5.25 Hypertension and Dental Management Plans

Your adviser will supply you with information concerning four hypertensive patients, including Mr. Simmons who is presented in section 5.22. For each patient, two conditions will be imposed - namely, no treatment for his hypertension and a medical management plan for his hypertension. Now assume that, under each of the two conditions noted above, each patient appears in your office requiring the following dental procedures:

1) Impressions for fixed bridgework requiring gingival packing and epinephrine string;
2) A tooth extraction due to an alveolar abscess and requiring a local or general anesthetic and a postoperative codeine.

In each instance describe your dental management plan. Where indicated note how your management was influenced by the patient's hypertension or by some aspect of his medical management plan.

The following references will enable you to make the decisions required good ones. In your reading you need not know all about hypertension or about all of the antihypertensive drugs. Rather you should concentrate on the potential effects of your proposed treatment on untreated hypertension and on drug incompatibilities.

References

A. - No. 9, pgs. 227-240, 251-310

B. - No. 10

C. - Those listed in section 5.26

Self-Evaluation

When you have completed the task noted above, open packet #1 supplied with this study guide. Compare your answers with those in the packet.

(Packet #1 includes precautions the student should have noted in respect to gingival packing (e.g., flushed face, anxiety, tachycardia), local anesthetic (potential hypertensive crisis due to introduction of epinephrine into artery), postoperative codeine (syncope after patient arrives home), general anesthetics (nitrous oxide may cause rise in blood pressure and mild tachycardia), etc.

When you are finished, consult your adviser who will arrange small group discussions concerning the treatment plans formulated by you and your fellow D.D.S. students.

5.26 Pathophysiology and Natural History of Hypertension

M.D. If you have followed the study guide from the beginning you have learned many facts about and skills helpful in the discovery and management of hypertension. To apply your learning to the care of patients requires clinical judgment. Let us return to Mr. Simmons in an effort to understand what is meant by clinical judgment.

Look at each item in Mr. Simmons' minimal data base and either defend its presence or give your reasons for excluding it. In doing so, assume each item is abnormal and indicate how this abnormality will affect your decisions.

To be able to do this adequately you have to understand the effect of hypertension on the human body and its organ systems. This requires knowledge of anatomy, physiology and pathology as they relate to the heart, blood vessels (including the optic fundus), cerebral function, lungs, kidneys, etc.

Self-Evaluation

Upon satisfactory completion you should be able to describe the major events in blood vessels, heart, kidneys, etc. occurring in each patient (including Mr. Simmons) about whom you will be given information in packet #2 accompanying this study guide. Packet #2 will ask you several questions about each patient. Packet #3 contains the answers to the questions asked in Packet #2 as well as illustrations, Xrays, EKG's and slides demonstrating pathophysiologic changes.

As you attempt to answer the above questions, note any difficulties you are having. If these are serious enough to significantly interfere with your learning, consult your adviser. In any event consult your adviser at the completion of this section and he will arrange small group discussions with resource faculty (basic scientists and experts in hypertension). During the discussions you should request help in those areas in which you are having difficulty.

References

A. - No. 5, pgs. 68-74

B. - No. 9, pgs. 1-8, 13-21, 25-50, 111-133 and 165-226

C. - No. 11, pgs. 24-243, 307-349

Note: No. 11 is a basic physiology text and contains material you may have covered in another study guide.

D. - No. 12

E. - No. 16, pgs. 524-526, 584-587, 1030-1032, 1401-1402

F. - No. 17, pgs. 224-233

G. - No. 18, pgs. 37-94

5.27 Hypertensive Crisis

M.D. Some patients have severe accelerated hypertension (sometimes referred to as Malignant Hypertension). Such patients usually have diastolic blood pressures above 140 mm Hg, hypertensive encephalopathy (mental dysfunction, coma or semi-coma, and/or other central nervous system deficits), acute congestive heart failure, retinopathy and renal failure. It is essential to recognize and refer such patients immediately for medical care by a specialist owing to the rapidity with which irreversible changes may occur.

References

A. - No. 9, pgs. 809, 814-817

B. - No. 13

Self-Evaluation

Packet #4 with this study guide contains some clinical problems of recognizing hypertensive cases and feedback for self-evaluation.

5.28 Screening for Known (Secondary) Causes of Hypertension

M.D. As noted earlier, only a very small percentage of people with hypertension have a known cause for their hypertension. Screening of all hypertensives for those with known causes is impractical and unsafe owing to the tests required (i.e. they are complex, numerous, costly and not without risk to the patient).

The following algorithm is suggested, therefore, to aid you in decisions about hypertensive patients:

A. Any patient < 17 years → refer to pediatrician (primary hypertension is uncommon in children)

B. Any patient > 17 years if there is a known sudden rise in B.P. → (sudden primary hypertension is uncommon)

1) Rapid Sequence Intravenous Pyelogram

2) 24-hour Urine specimen for Vanylmandelic Acid (VMA)

C. Any patient with an abnormal result in B1 or B2 above → refer to internist

D. Any patient > 17 years whose blood pressure cannot be controlled adequately with reasonably simple drug therapy → refer to internist

E. Any patient with symptoms or signs suggestive of

1) Pheochromocytoma → 24-hour urine for VMA (refer to internist if abnormal result)

2) Coarctation of the aorta → refer to cardiologist

Raise any questions you have concerning this algorithm with your adviser. He will discuss them with you and/or arrange for you to discuss it with other students and a resource faculty member.

References

A. - No. 5, pgs. 68-79

B. - No. 9, pgs. 21-23, 463-480, 499-504, 471-601, 653-662, 715-726

Self-Evaluation

Listed below in table 1 are data on eight patients. Note those patients for whom you would perform screening tests for secondary hypertension, which tests you would order and why, which patients you would refer and to whom. When you are finished, open packet #5 which will give you feedback on your answers.

TABLE 1

Patient	Age (years)	Sex	Symptoms	Blood Pressure (Average)	Physical Exam	Present Medications	Serum K^+ (MEQ/L)
1	12	M	None	150/105-102	Negative	None	4.8
2	38	F	None	149/98-95	Abnormal Bruit	Blood pressure pills	4.2
3	55	F	None	160/102-100	Negative	None	5.0
4	25	F	None	150/92	Weak femoral pulses	None	5.2
5	46	F	Sweating Episodes	149/90	Negative	None	5.5
6	44	F	None	144/95	Hirsute obese moon facies	None	4.6
7	50	M	None	148/98	Negative	Blood pressure pills	2.8
8	28	F	None	160/115	Negative	None	4.8

5.29 Management Plans

M.D. Let us now return to Mr. Simmons (5.22). He is in your office and you have decided that his condition requires a plan of management. Are you going to prescribe drugs? If so which one(s), what dosage, route of administration, frequency, etc.? What are the pharmacologic actions you should keep in mind and how are you going to educate the patient about them? What should you warn the patient about? What about other modes of therapy, initial schedule of visits, and data to be checked at subsequent visits.

With the above and other considerations in mind, formulate a plan of management for Mr. Simmons and the patients listed in table 2 below.

TABLE 2

PATIENT	1	2	3	4	5	6	7	8
AGE	47	68	34	39	42	74	28	54
SEX	F	M	M	F	M	F	F	M
Ht. (cm)	155	180	178	160	170	153	160	175
Wt. (kg)	78	73	86	60	68	80	61	80
Occupation	Secretary	Executive	Mailman	Teacher	Fireman	Novelist	Housewife	Janitor
Present Medications	Tranquilizer	Some drug for high blood pressure	None	Antacids	Aspirin	None	Birth control Pills	High blood Pressure pills
Average Blood Pressure	190/100-103	174/90-93	180/110-108	175/125-130	220/140/135	210/130-126	180/105/100	180/90-0
Fundoscopy	Normal	Slight Arteriolar Narrowing	Normal	A-V nocking	Papilledema hemorrhage	Arteriolar spasm few exudates	Normal	Normal
Chest Auscultation	Normal	Normal	Normal	Few basilar rales	Rales throughout	Many basilar rales	Normal	Normal
Chest X-ray	Normal	Normal	Normal	Slight Cardiomegaly	severe cardiomegaly	moderate cardiomegaly	Normal	Normal
EKG	Normal	L.V.H.	Normal	L.V.strain	L.V.Strain	L.V. Strain	Normal	Normal
Serum K+ (MEQ/L)	4.0	3.4	4.4	4.0	3.8	5.0	3.2	2.6
Serum Bicarb (MEq/L)	27	33	30	27	28	28	29	34
Blood (MG%) Creatinine	1.0	2.0	1.3	2.5	3.4	2.8	0.9	1.6
Urinalysis	Neg.	Tr.Protein Tr.Glucose	Neg.	1+Protein	4+Protein	Tr.Protein	3+Glucose	Neg.
Serum Uric Acid (mg%)	4.0	6.8	3.6	6.0	8.4	5.4	5.0	5.9
Blood sugar (mg%) 2 hr. post prandial	110	134	108	101	105	88	140	95
Serum Cholesterol (mg%)	305	340	300	188	190	150	283	290

Self-Evaluation

The following references contain information relevant to constructing good plans of management. Read them and compare your answers to the information contained in them. Wherever appropriate revise your management plans.

References:

A. - No. 1, pgs. 13-16, A-6 (bottom)
B. - No. 2, pgs. 29-30, 79-85
C. - No. 3, pgs. 41-55
D. - No. 5, pgs. 99-104
E. - No. 14

When you are satisfied with your management plans submit them to your adviser who will arrange for a faculty person expert in hypertension (resource faculty) to review them with you singly or in a small group with fellow M.D. students. Your adviser will also arrange for you to practice skills in communicating management plans with simulated patients.

5.3 Treatment Adequate or Not?

H.C.C.
M.D.

The cardinal consideration in any decision concerning the adequacy of therapy is the outcome, i.e., is the blood pressure under control? If this has occurred, most other considerations assume minor importance. If control has not occurred, multiple possibilities must be considered. Many of these problems, leading to poor outcomes can be prevented. In any case we must be aware of their presence in a less-than-ideal outcome if we are to increase the likelihood of therapeutic adequacy.

5.31 Patient Education

H.C.C.

It should be clear by now that a program of patient education is essential in the treatment of any chronic disorder, including hypertension. It should also be clear that educational programs have to be individualized to fit the needs of each patient. This implies that there will be multiple educational resources for patient education in hypertension, all of which requires coordination. The major role of the H.C.C. in patient education will be that of coordination. The following guidelines should be helpful in carrying out these coordination functions:

A. System of Identifying Patient Learning Needs

It will be essential that a diagnosis of each patient's learning needs is made. It will be the H.C.C.'s role to assist where appropriate in making these diagnoses but more importantly, to assure that they are made. In so doing, consideration must be given to determining a patient's capacity for learning, reading and remembering. Often this will involve setting up team conferences to arrive at educational diagnoses and could include a regular review of presenting problems and a corresponding "need" or "no need" column for a specific educational material.

B. Systematic Compilation and Utilization of Educational Resources

The H.C.C. will act as the repository of educational resources. These may be in the form of instructional materials (pamphlets, books, audiovisual materials, etc.) or human resources (social workers, M.D.'s, groups of other hypertensive patients, etc.). The H.C.C. should collect those resources thought to be useful for patient education and assist the health care team in selecting those that are thought to be appropriate for a particular patient or group of patients.

In the utilization of these resources the H.C.C. should pay particular attention to internal and external factors. Internal factors include an assessment of a patient's acceptance or denial of his illness. External factors include a consideration of utilizing opportunities for patient education during periods of potential patient contact that are poorly utilized - e.g. waiting room time. Both internal and external factors which potentially interefere with patient compliance should be identified and appropriate measures should be taken to minimize their interference.

C. Evaluating the Effectiveness of Educational Programs

As implied in the introduction to this section, the ultimate evaluation is the control of the blood pressure. This outcome measure, however, is often insufficient and some means must be sought to evaluate individual parts of educational programs. For example, perhaps the patient has ceased taking his antihypertensive medication. With this knowledge the health care team (or members thereof) would attempt to discern the reasons for this failure (i.e. diagnose educational needs, A above) and prescribe appropriate educational resources (B above). Measures that would determine the patient's subsequent compliance with taking his medications might be a satisfactory measure of the effectiveness of this educational program. If compliance with this prescribed medication fails, however, closer scrutiny is necessary to make a more specific diagnosis of educational need and subsequent educational therapy. It may be that the patient has temporary financial problems preventing him from having his prescription filled and is ashamed to tell anyone about his difficulty. In this phase or in steps A or B, the health care team may wish to consult with professional educators for specific advice and help.

Self-Evaluation

Packet #5 contains four patient vignettes. The initial section gives you pertinent information about each patient and asks you to carry out patient education duties consonant with your role as H.C.C. The second section contains a list of those things you should have included in the tasks requested of you, thereby providing you with some feedback on your performance.

If you question the validity of any items in this section, consider for a moment when you were faced with a potentially anxiety producing situation preferably involving some aspect of your health care. In like fashion, were you ever asked to begin a series of treatments that would likely last the rest of your life, especially when you were asymptomatic at the time you were urged to undergo these treatments? How many times were you able to take a drug in the exact amount prescribed, at the times prescribed and for the duration prescribed? Perhaps now you can gain some additional insight into the need for patient education in the management of hypertension.

Reference:

A. - No. 3, pgs. 79-101

5.311 Teaching Patients How to Take Their Blood Pressure

M.c.c.
M.D.

Often you will find it helpful to have people take and record their blood pressure or that of a household member. Such a regimen has at least three potential benefits: 1) more recordings are possible than if only done at the primary care setting; 2) the recordings are obtained under situations more closely associated with the patient's everyday experience; 3) the frequent recordings may provide necessary feedback about the success or failure of a management regimen which may have no effect in eliminating symptoms in an asymptomatic patient and indeed may even produce untoward symptoms.

At this point you should be able to obtain and record blood pressures accurately. List the steps you have to go through to do so. Utilizing this list, attempt to teach a neophyte (friend, family member, etc.) how to take his own blood pressure accurately. When this neophyte is able to do so accurately (e.g., within ± 5 mm Hg of your readings) within two hours of instruction, you will have successfully performed a required objective of this module. If you are having difficulty, speak with your adviser to obtain some feedback. With his help and that of the references below you should be able to overcome your difficulties.

References:

A. - No. 5, pgs. 55-60

B. - No. 15

5.32 Patient Compliance

M.C.C.
M.D.

Let us return to Mr. Simmons (5.22) and update his history. He first received a diuretic which failed to control his blood pressure adequately. Three weeks ago reserpine (0.1 mg/day) was added to his regimen. At his present visit Mr. Simmons is visibly upset because he can no longer concentrate on his work, especially the work he brings home at night.

In reviewing the data about Mr. Simmons you should be able to point out potential problems relating to his compliance with management recommendations. Among these are: 1) his reluctance to show up for secondary screening; 2) his refusal to allow three visits for secondary screening; 3) his apparent personality characteristics of being too busy to comprehend potential dangers to himself or his family; and 4) a drug (reserpine) which is probably causing undesirable symptoms in a previously asymptomatic patient.

Among the items potentially leading to Mr. Simmons' non-compliance, the following should have been addressed:

A. Does Mr. Simmons appreciate the risk he faces if his blood pressure remains under poor control? Is he aware of the decrease of his insurability?

B. Is he able to and does he take and record his own blood pressure?

C. Is reserpine an appropriate drug for someone like Mr. Simmons who has to carry out involved thought processes in his work?

D. Is he aware of the long-term commitment required of him if he is to achieve and maintain control of his hypertension?

E. Has he entered into any "mutual contracts" with the M.D. and/or M.C.C., i.e., is he taking an active role in stating expectations and carrying out treatment plans?

As stated earlier, patient compliance is an absolutely essential ingredient of adequate control of hypertension. The best thoughts, intentions and actions of health care providers mean little unless followed by appropriate patient behaviors.

Self-Evaluation

Packet #6 contains several problems of patient compliance for which you are asked to make formulations and remedial suggestions. Thus, in each instance you will be able to obtain some feedback on your performance.

5.33 Monitoring of Hypertensive Patient Care

M.D.
M.C.C.

As is true in any profession, feedback concerning performance is essential. In the case of patients with hypertension we should have readily available in a systematic fashion information concerning patient care outcomes (i.e., is the blood pressure under adequate control or progressing according to expectations) and patient care processes (patient education, drug dosage, patient compliance, drug side effects, etc.).

One might view such feedback mechanisms from both prospective and retrospective vantage points. In respect to the prospective approach we can consider the plans we make for individual patients to better ensure that essential processes and outcomes are checked at appropriate times. In respect to the retrospective approach we can take a comprehensive review of the system as it reflects the care of patients with hypertension. Thus, we will examine monitoring in respect to both individual patients and the system. If you have never had experience with other study guides or wish some refresher information, refer to the study guide on "Medical Audit" before progressing to sections 5.331 or 5.332.

5.331 Monitoring Individual Patients

M.D. In section 5.29 you formulated management plans for Mr. Simmons and the eight patients in Table 2. In section 5.3 and its subsections your attention was drawn to consideration of the adequacy of therapy. Your attention is again directed to the nine patients in section 5.29. For each patient, re-examine your management plans to be sure that you have stipulated what patient care processes (i.e., drug dosage, lab tests, weight, etc.) need to be checked and when and by whom. You should also indicate when and how you would check each patient's outcome. Revise your management plans accordingly.

When you have finished, contact your adviser who will arrange a small group meeting to discuss this subject and provide you with feedback on the monitoring aspects of your management plans. H.C.C. students will be members of this group.

H.C.C. As H.C.C. students your adviser will give you a series of patient management plans formulated by M.D. students. You should examine each one and state what your role would be in each instance and how you would carry out your role. Your adviser will then arrange a group meeting with the M.D. students who formulated the management plans in order to clarify your respective roles.

5.332 Monitoring the System of Hypertensive Care

H.C.C.
M.D. As is detailed in the study guide on Medical Audit, retrospective monitoring of the system of patient care involves five basic elements. Here we shall be concerned only with the first three, which are: 1) Creating criteria and standards for patient care; 2) Evaluating performance via medical records; and 3) Creating educational programs to correct deficiencies.

5.3321 Criteria and Standard Setting

M.D. Criteria are statements of what should occur ideally to patients with a given problem. In hypertension, for example, a criterion might be that "all patients with an average diastolic blood pressure on secondary screening above 105 should receive an antihypertensive drug." A standard is that level of compliance with a criterion below which performance is not acceptable. In the case of the above criterion, one might set the standard at 95% compliance to allow for some (i.e., 5%) individualization of therapy or extenuating circumstances.

Given your present knowledge of hypertension, construct a series of criteria which you believe constitute the critical processes and outcomes for patients with hypertension. For each criterion set a standard.

When you have completed your criteria and standards contact your adviser who will arrange a small group meeting with other M.D. students. As a group it will be your task to arrive at consensus on a series of criteria and standards for the care of hypertensive patients.

5.3322 Evaluating Performance by Abstracting Records

H.C.C. Contact your adviser who will arrange a small group meeting of M.D. and H.C.C. students. The M.D. students will be trying to arrive at consensus on a series of criteria and standards for the care of hypertensive patients. As the M.D. students begin to arrive at consensus it will be your task to make sure that you understand their criteria.

Upon adoption of the criteria your group of H.C.C. students should design a data abstract sheet. This sheet should pinpoint the data you will need to abstract from the charts in order to determine whether or not the criteria and standards were met.

After designing the data abstract sheet, three randomly selected charts of hypertensive patients should be abstracted twice -- once by an M.D. and once by an H.C.C. and each independent of the results of the other. Then the results of the two independent abstractions should be reviewed by the M.D.'s and H.C.C.'s to clarify misconceptions and misunderstandings. If necessary, the data abstract sheets may require revision based on discoveries of this prior independent abstraction of sample records.

Once the data abstract sheet appears to be mutually acceptable to M.D.'s and H.C.C.'s, each H.C.C. student will be given 100 sample records of hypertensive patients to abstract. Upon completion of the abstraction process, the H.C.C. student should prepare and deliver a summary presentation of the data discovered in the abstraction process to the group of M.D. students.

M.D.

5.3323 Creating Educational Programs to Correct Deficiencies

With the data provided by the H.C.C. students in 5.3322, each M.D. student should list the likely causes of the deficits in order of priority. Your adviser will then reconvene your group and it will be your task to arrive at consensus about the likely causes of the discovered deficiencies and outline a proposed educational program designed to correct each deficiency.

6.0 ADVANCED WORK

H.C.C.
M.D.
D.D.S.

The introduction (1.0) of this module emphasized the magnitude of the problem of hypertension and the importance to identify persons with elevated blood pressure and effectively treat them. As has also been discussed, relatively simple and effective treatment is available, but remains largely unused. Two groups need to be made aware of this situation: health professionals and the general public (especially those designated as high risk).

This section introduces various strategies to educate both the health professionals and the community at large. But, before any of the approaches are effective, there must be acceptance of the principle that education and public awareness are a necessary step in the control of hypertension.

The following are some examples of the advanced work in hypertension available in the immediate community. Generally students elect the advanced work because of interest generated from their work in the study guide. So, this outline should not confine your interests, but rather provide some resources and beginning points.

6.1 Community Action

H.C.C.
M.D.
D.D.S.

As health professionals interested in the detection and management, contacting various national and state volunteer agencies (such as the American Heart Association, the National Kidney Foundation, the Citizens for the Treatment of High Blood Pressure, etc.) will introduce you to some of the work being done. If you chose to work further with these agencies, some areas of interest may be:

1. Formation of local and state consortia of groups concerned with high blood pressure.
2. Development of training programs for the agency's staff in educational and community programs in high blood pressure.
3. Development of model programs in screening, management, and follow-up evaluation in high blood pressure that can be applied to different communities, including programs that utilize allied health personnel in office and clinical settings.

4. Development and expansion of professional and public educational programs.

5. Identification of problems and deficiencies of hypertension education.

These agencies could also direct you to specific community and neighborhood organizations who are developing or carrying out screening and educational projects. Items one through five above could be applied here, as well as the following:

1. Specially designed, community-oriented educational programs.
2. Seeking out available resources to develop.
3. Continual screening program.
4. Determining the cultural implications (e.g., language, what entré is needed into the community) of public education, screening programs, patient compliance and continual monitoring.

6.2 Clinical Studies

M.D. If you are interested in pursuing further the secondary causes of hypertension, see the physicians listed below, located at P.M.C.

______________________ ______________________

______________________ ______________________

At the University of California School of Medicine, San Francisco, Dr. Maurice Sokolow is in charge of demonstration program in hypertension. This serves as an observation program for physicians treating hypertension. For more information contact ____________________ at UCSF.

6.3 Patient Presentations

N.C.C.
D.D.S.
M.D.

Packet #7 contains additional patient presentations. Each patient presents unique problems which require unique solutions. In each instance you will be supplied with feedback concerning suggested answers to the questions posed. If you have any questions about these patients that are not answered in the packet, consult your adviser.

7.0 POST TESTS

Several types of evaluations will be given to assure that you can demonstrate minimal levels of competence relating to hypertension. Each evaluation format will be described briefly, including its purpose for each category of health professional student.

A - Multiple Choice Tests

These will be fairly standard in format and will be familiar to almost all students. In most instances a stem sentence will be presented and the student will be asked to select one of four or five proposed answers. While all or most of the answers may be plausible, the student is asked to select the best answer. Occasionally these will be true or false or matching questions.

M.D. Students - These will assess the student's ability to recall knowledge, including the sciences basic to an understanding of hypertension such as anatomy, physiology and pharmacology. They will also be used to see whether students can make appropriate recommendations for primary and secondary screening.

N.C.C. and D.D.S. Students - As for M.D. students but will not include secondary screening.

B - Simulated Patients

The M.D. and N.C.C. students will be asked to demonstrate their skills of communication with such "patients." This implies obtaining the parts of the minimal data base for which they are responsible, communicating the treatment plans and obtaining compliance. The D.D.S. student will meet with these "Patients" to evaluate his ability to obtain compliance with the recommendations of primary screening. The M.D. student will also attempt to obtain from them those minimal data aspects relating to physical examination. All three categories of students will have to demonstrate satisfactory techniques in obtaining accurate blood pressure readings and in teaching blood pressure measuring techniques to simulated patients.

C - Written Case Histories

These will be presented to M.D. and D.D.S. students. The former will then be asked to devise detailed management plans for each patient. The D.D.S. student will be asked to integrate the patient's therapy for hypertension with his proposed treatment plan for a dental condition.

D - Patient Management Problems (PMP's) and Computer Aided Simulation of the Clinical Encounter

The PMP is a technique in which the student requests information and receives immediate feedback. It measures the way in which a student approaches a problem.

Computer-aided Simulation of Clinical Encounters (CASE) is similar, but the student interacts directly with a computer. Both will be utilized mainly for medical students to evaluate their problem solving skills in hypertension.

E - Diagnostic Management Problems (DMP's)

These are simulated patient in which the essential data about each patient is on a large number (usually 96) of cards. The student selects the category of information he believes is most necessary at that time to define the patient's problem. This format allows evaluation of the sequence of problem solving and will be used for M.D. students only in hypertension.

F - Case Study Problems (CSP's)

For an example of this format phase refer to the obesity module "Post test" Section. M.D. Students will experience this format to assess their ability to utilize information appropriately in the handling of problems related to hypertension.

G - Auditing

The M.D. student will be required to present his criteria for the care of hypertensives. The N.C.C. student will be required to design appropriate abstract sheets and abstract sample records. The D.D.S. student will design criteria for primary blood pressure screening and assuring that his high risk patients have their blood pressure checked. Both the M.D. and D.D.S. students will be required to devise corrective plans after receiving audit data.

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APPENDIX 2

(CITED IN CHAP. 2, VOL. I)

IDENTIFICATION AND PRIORITIZATION OF HEALTH CARE PROBLEMS

The method of Williamson, et al (1968), requires a listing of the health care problems frequently seen, with an estimate of the disability each problem is likely to create. Several studies in a primary ambulatory setting (Bain, S.T., and Spaulding, W.B., 1967; Clute, K.F., 1963; Cross, H., 1972; Fry, J.,1952 ; Hodgkin, K., 1966; Logan, W.P., and Cusion, A.A., 1958; and Peterson, O.L., Andrews, L.P., Spain, R.S., et al, 1955), contain the former types of data (i.e., incidence). However, the studies differ in methodology, terminology, geographic setting and cultural setting, which makes comparisons or generalizations difficult.

One study (Schulman, D.G., and Siegel, H.L., 1973 ; Lea Associates, Inc., 1969; and Tenny, J.B., 1973), however, involved 831 physicians and 23,407 office visits. With few exceptions, the patient visits were for primary care in an ambulatory setting. The sample was recent and large, from many locations throughout the United States. The method was applied to these data.

From the list of the twenty most frequent diagnoses in this study, four were non-specific, such as "medical or special examination," and therefore not usable for estimating disability. For each of the remaining 16 diagnoses, four categories of disability were created: DEATH, BEDRIDDEN, UNABLE TO WORK OR TO GO TO SCHOOL, AND SYMPTOMATIC. (Table 1) The maximum disability weights allocated to each category were predetermined largely from a review of vital and health statistics (U.S. Public Health Service, 1968).

Physicians were asked to derive estimates of the amount of disability that would probably be produced in each diagnosis category if patients received adequate care. Then they were asked to repeat their estimates for each diagnosis assuming patients received no health care. The arithmetic sum of the average "adequate care" disability weights was subtracted from the arithmetic sum of the average "no care" disability weights. This arithmetic difference is a reflection of the magnitude of the disability that is preventable by the provision of adequate health care. Finally, this arithmetic difference was multiplied by the percentage of total ambulatory visits contributed by that particular diagnosis. This yields a combined measure of frequency and preventability, producing a list of ambulatory patient diagnoses in a priority order based upon the most frequent conditions which are most amenable to health care (Table 2).

This process can easily be expanded to include all of the 41 diagnoses comprising the bulk of the SHP curriculum.

· (WITH NO CARE)

ICDA DIAGNOSIS	DISABILITY *				FREQUENCY (%)
	DEAD (16pts)	BEDRIDDEN (8 pts)	UNABLE TO WORK (4 pts)	SYMPTOMATIC (2 pts)	
PRE-NATAL CARE					3.2
ESSENTIAL BENIGN HYPERTENSION					3.0
ACUTE U.R.I.					2.8
NEUROSES					2.4
CHRONIC ISCHEMIC HEART DISEASE					1.9
DIABETES MELLITUS					1.5
OBESITY (Not specified as endocrine in origin)					1.5
OTITIS MEDIA					1.4
OTHER ECZEMA & DERMATITIS					1.3
ACUTE PHARYNGITIS					1.3
BRONCHITIS					1.2
HAY FEVER					1.2
SPRAINS & STRAINS of Other					1.2
ACUTE TONSILLITIS					1.1
SYNOVITIS, BURSITIS & TENOSYNOVITIS					0.9
DISEASES OF SEBACEOUS GLANDS					0.9

* Disability Weights

100 People For Ten Years

DEATH - Maximum 16 Points

16 = 20 deaths and 10 during first five years
12 = 15 deaths and 7 during first five years
8 = 10 deaths with some before five years
4 = 5 deaths anytime during first five years
2 = more than 2 deaths during first five years

BEDRIDDEN - Maximum 8 Points

8 = more than 2,000 bedridden days during ten year period
4 = more than 1,000 bedridden days during ten year period
2 = more than 500 bedridden days during ten year period

UNABLE TO WORK - Maximum 4 Points

4 = more than 1500 days unable to work during ten year period
2 = more than 750 days unable to work during ten year period
1 = more than 375 days unable to work during ten year period

SYMPTOMATIC - Maximum 2 Points

2 = more than 80,000 symp. days during 10 yr. period
1 = more than 40,000 ↓
1/2 = more than 20,000 ↓

TABLE 1

Prioritized Diagnoses from National Ambulatory Medical Care Survey

Total Visits = 23,407

(A) ICDA DIAGNOSIS	(B) (INCIDENCE) PRIORITY	(C) INCIDENCE (#)	(D) (MEAN) DISABILITY WEIGHT WITH AVERAGE CORE	(E) # OF RATERS	(F) (MEAN) DISABILITY WEIGHT WITH NO CORE	(G) (F)-(D)	(H) (G)x(C)	DISABILITY PREVENTABLE PRIORITY
Pre-natal Care	3	3.2	4.61	4	6.45	1.84	5.89	10
Essential Benign Hypertension	4	3.0	13.90	8	20.55	6.65	19.95	1
Acute U.R.I.	5	2.8	3.94	9	6.26	2.32	6.50	9
Neuroses	6	2.4	12.71	9	15.89	3.18	7.63	8
Chronic Ischemic Heart Disease	7	1.9	24.51	6	26.27	1.76	3.34	12
Diabetes Mellitus	8	1.5	14.32	6	23.74	9.42	14.13	3
Obesity	9	1.5	4.32	5	14.68	10.36	15.54	2
Otitis Media	10	1.4	1.81	4	10.90	9.09	12.73	4
Eczema and Dermatitis	11	1.3	6.07	7	7.63	1.56	2.03	13
Acute Pharyngitis	12	1.3	3.30	6	11.38	8.08	10.5	6
Bronchitis	14	1.2	14.41	6	22.88	8.47	10.16	7
Hay Fever	15	1.2	0.59	4	0.88	.29	.35	16
Sprains and Strains of Neck and Back	16	1.2	6.62	4	8.06	1.44	1.73	14
Acute Tonsillitis	17	1.1	3.30	5	13.50	10.2	11.22	5
Synovitis, Bursitis & Tenosynovitis	19	0.9	5.47	4	9.38	3.91	3.52	11
Acne, Sebaceous Cyst & Seborrhea	20	0.9	3.00	4	3.89	0.89	.8	15

TABLE 2

* Adapted from Table 5 in Schulman and Siegel, 1973.

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APPENDIX 3

(CITED IN CHAP. 2, VOL. I)

THE CLINICAL UNITS

The Central Clinical Unit

- Major Characteristics
  - at or near central campus (e.g., PMC)
  - highest number of secondary and tertiary care providers.immediately available.
  - site of SHP student's first clinical unit experience
  - large but variable amounts of time loosely scheduled to accommodate Stage 2 students
  - site of most of student's remedial experiences
  - intimately involved with primary care interns and residents who will provide and supervise care as well as teach
  - intimately involved with emergency care services
- Student Utilization

M.D.

Stage 1- for observation and demonstration
Stage 2- for observation, practicing initial skills
Stage 3- beginning experiences
Stage 4- first "full-time" responsibilities
  - progressively increasing responsibility for patient care
  - close faculty supervision, especially at first
  - multiple opportunities to interact with specialists

Stage 5- only for special interest elective

D.D.S.

Stage 1- for observation
Stage 2- for minor amounts of observation and patient contact (most of this Stage is spent in laboratory)
Stage 3- not utilized if there are existing dental clinics (e.g., UOP)
Stage 4- same as for M.D., above

H.C.C.

Stage 1- observation
Stage 2- observation, practice of basic skills, modeling of faculty
Stage 3- for principal application of learned skills
Stage 4- for assuming increasing responsibility

The Urban Clinical Unit

- Major Characteristics
  - within 30 minutes traveling time from PMC
  - located in low-income area
  - located in area presently underserved in primary health care
  - outreach mechanisms emphasized
  - close liaison with Central (PMC) Clinical Unit
  - exchange of patients and specialists with Central (PMC) Clinical Unit

- Student Utilization

M.D.

Stage 1 - for observation
Stage 2 - primarily for observation
Stage 3 - unlikely
Stage 4 - after Central Clinical Unit experiences
- when able to assume major responsibility for patient care
Stage 5 - for special interest elective

D.D.S.

Stage 1 -
Stage 2 - uncommonly, and then primarily for observation
Stage 3 -
Stage 4 - same as M.D. student, above

HCC

Stage 1 -
Stage 2- unlikely except for observation or sporadic practice of skills
Stage 3-
Stage 4 - same as M.D. student, above

The Rural Clinical Unit

- Major Characteristics
    - emphasis on mechanisms for solving problems of distance between patients and providers
    - patients requiring tertiary care referred to PMC
    - manned solely by primary care providers
    - located in rural area presently underserved in primary health care
- Student Utilization

M.D.

Stage 1 - occasionally for observation
Stage 2 - not utilized
Stage 3 - not utilized
Stage 4 - latter part of this stage only
Stage 5 - for special interest elective

D.D.S.

- same as for M.D. students (except no Stage 5)

HCC

- predominantly for Stage 4 students

Staffing Patterns for the central unit are discussed in the Task Force Report in Appendix 13.

APPENDIX 4

(CITED IN CHAP. 5, VOL. I)

SCHOOL OF HEALTH PROFESSIONS
EXTERNAL ORGANIZATIONAL OPTIONS

August, 1974 (Revised October, 1974)

(Prepared for consideration within UOP & PMC)

INTRODUCTION

This report describes three major organizational options for the School of Health Professions, and the advantages and disadvantages of each option for the UOP. Although such considerations are required as part of our contract with the Bureau of Health Resources Development, they are presented now because of their relevancy for decision-making regarding the feasibility of a School of Health Professions, particularly in the context of financial responsibilities.

The organization options described below provide responsibility for decision-making in the four major spheres of activity of an academic health center:

1. Academic functions, including selection and promotion of students; selection, assignment and promotion of faculty; development of curriculum; and granting of degrees.
2. Financial responsibility and allocation of resources.
3. Organization of patient care services.
4. Management of research.

The first option provides the UOP with academic and financial responsibility for the SHP, and defines relationship with PMC and IMS either through a joint committee or through contractual relationships. The second option establishes a separate corporate structure with financial liability for the SHP, while maintaining academic quality control with the UOP. The third option provides a sharing of financial liability in a joint venture between UOP,PMC, and IMS.

I. UOP GOVERNANCE OPTION

Under this option the University of the Pacific is the governing structure with academic and financial responsibility.

"A" - Joint Committee (Figure 1): Under this sub-option, the existing administrative structures of the University of the Pacific, Pacific Medical Center and the Institutes of Medical Sciences would remain as they are now, with the probable addition of either a vice president or provost for health-related educational functions in San Francisco. This sub-option clearly separates the different missions of each of the three institutions. Where there are common concerns (e.g., appointments, affiliations, new programs) a joint committee, composed of representatives from each of the involved institutions, who could speak for their respective boards, would develop policy.

Advantages to UOP

1. Maintains academic responsibility and quality control for educational functions.
2. Separates education functions from patient care and biomedical research functions.
3. Does not assume patient care liability except when primary function is education.
4. Mechanism at policy level for resolving areas of common concern.

Disadvantages to UOP

1. Financial responsibility for SHP.
2. May be "boundary" disputes over what is or is not education or patient care.

"B" - Contractual Arrangements (Figure 2): This sub-option is similar to the preceding, except that each school (or the San Francisco vice president or provost) would develop contractual relationships for service, faculty, facilities and other resources with PMC, IMS, and other institutions. There would be no joint committee.

Advantages to UOP

1. Maintains academic responsibility and quality control.
2. Little change in current relationships.
3. Administrative responsibility for health related educational functions at local (San Francisco) level.

Disadvantages to UOP

1. Financially responsible and liable.
2. Potential for less clarity regarding responsibility for some patient care functions, although these could be explicitly delineated in contracts.

II. "SEPARATE CORPORATION" OPTION (Figure 3):

In this option, a separate corporate structure with a separate governing board composed of members of the University of the Pacific, PMC, IMS, and, perhaps others, would be formed. This corporation would assume financial responsibility for the School of Health Professions, but a direct relationship for academic responsibilities would be maintained with the UOP through the academic vice president. In this relationship, as before, the School of Health Professions would develop contractual relationships as necessary with PMC, IMS, and other UOP schools.

Advantages to UOP

1. UOP not financially liable.
2. Maintains academic quality control.
3. UOP can maintain plurality or majority of governing board.
4. Analogous to SMS's responsibility for learning disabilities and visual sciences programs (initially).

Disadvantages to UOP

1. Loss of direct financial control.
2. Departure from tradition.
3. Risk of legal or accreditation problems.
4. Potential for conflict of interests between SHP Board and UOP Board.

III. "JOINT VENTURE" OPTION (Figure 4):

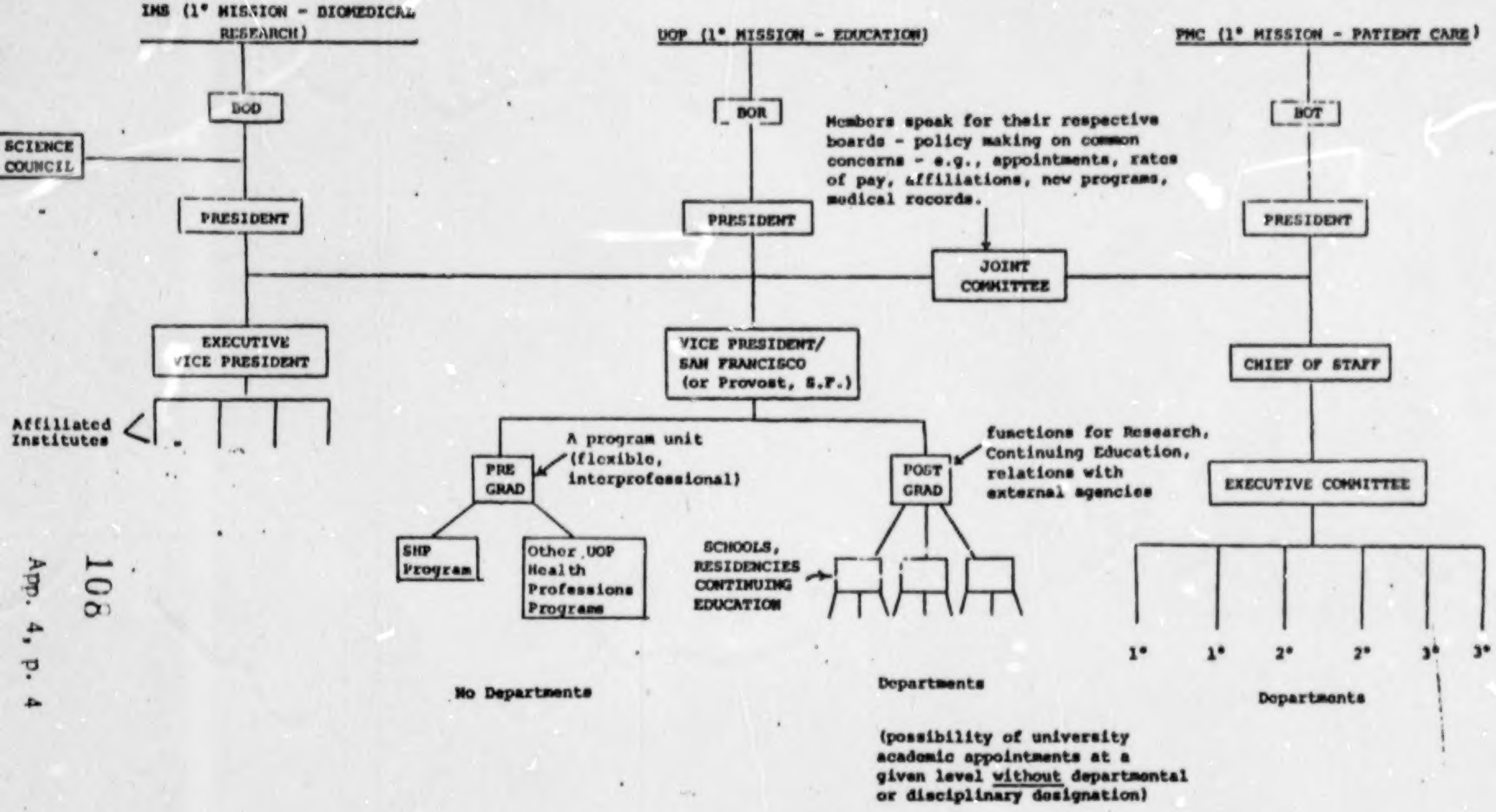
This arrangement is similar to the preceding, except that a new governing board would be formed from components of each of the separate institutions, probably in equal proportions. In this instance, the SHP Board would not be financially independent, but rather, the liability would be assumed by each of the components of the Board.

Advantages to UOP:

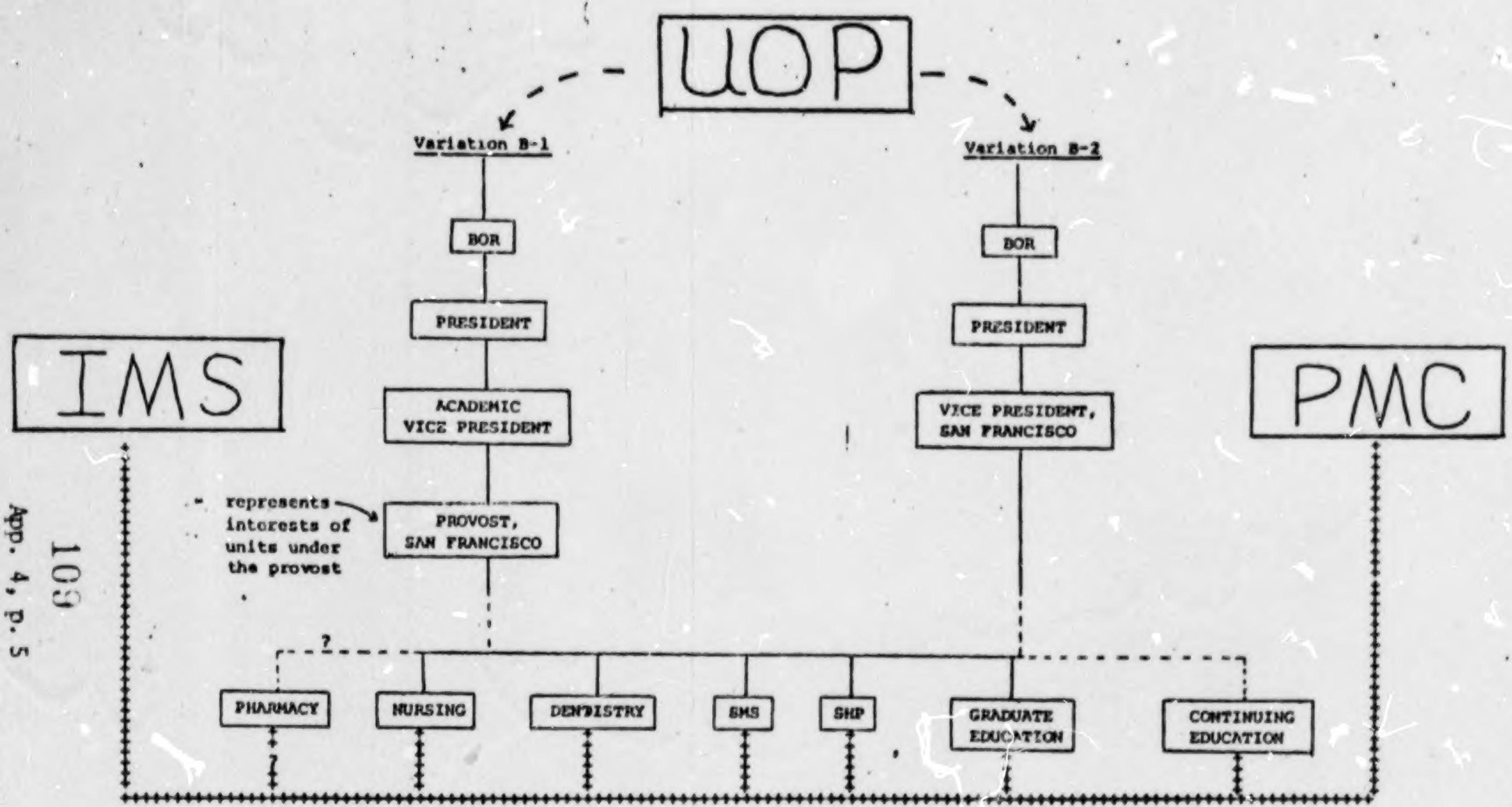
1. UOP shares responsibility and financial liability for SHP with other components.

Disadvantages to UOP

1. UOP shares governance responsibility with other components.
2. UOP involved in some patient care functions.
3. Competition for time and attention of UOP Regents.


IMS (1° MISSION - BIOMEDICAL RESEARCH)
UOP (1° MISSION - EDUCATION)
PMC (1° MISSION - PATIENT CARE)
BOD
BOR
BOT
SCIENCE COUNCIL
PRESIDENT
PRESIDENT
PRESIDENT
Members speak for their respective boards - policy making on common concerns - e.g., appointments, rates of pay, affiliations, new programs, medical records.
JOINT COMMITTEE
EXECUTIVE VICE PRESIDENT
VICE PRESIDENT/ SAN FRANCISCO (or Provost, S.F.)
CHIEF OF STAFF
Affiliated Institutes
A program unit (flexible, interprofessional)
PRE GRAD
POST GRAD
functions for Research, Continuing Education, relations with external agencies
EXECUTIVE COMMITTEE
SHP Program
Other UOP Health Professions Programs
SCHOOLS, RESIDENCIES CONTINUING EDUCATION
1°
1°
2°
2°
3°
3°
No Departments
Departments
Departments
(possibility of university academic appointments at a given level without departmental or disciplinary designation)

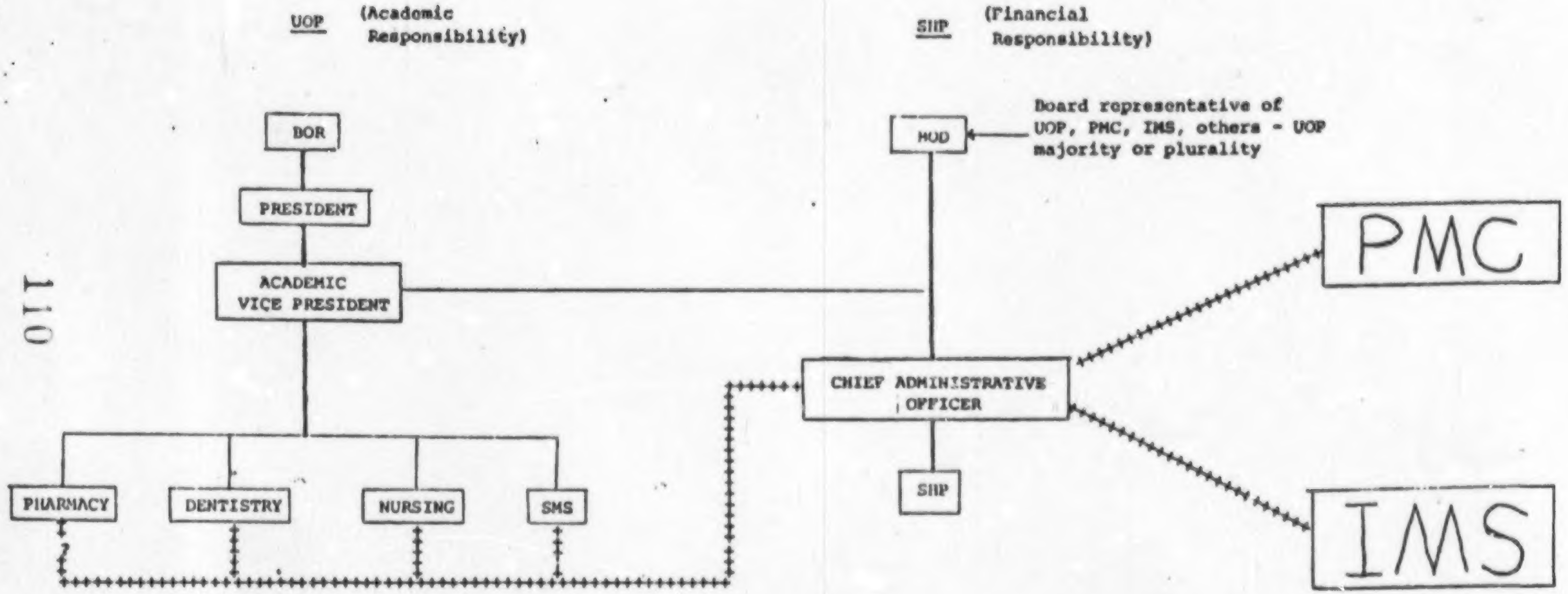
1. "UOP GOVERNANCE" OPTION
"A" (JOINT COMMITTEE)
FIGURE 1


UOP
Variation B-1
BOR
PRESIDENT
ACADEMIC VICE PRESIDENT
PROVOST, SAN FRANCISCO
represents interests of units under the provost
Variation B-2
BOR
PRESIDENT
VICE PRESIDENT, SAN FRANCISCO
IMS
PMC
?
PHARMACY
NURSING
DENTISTRY
SMS
SHP
GRADUATE EDUCATION
CONTINUING EDUCATION
?

I. "UOP GOVERNANCE" OPTION - "B" (CONTRACTS)

++++ Contractual Relationships for Servic
Faculty Facilities, Other Resources*

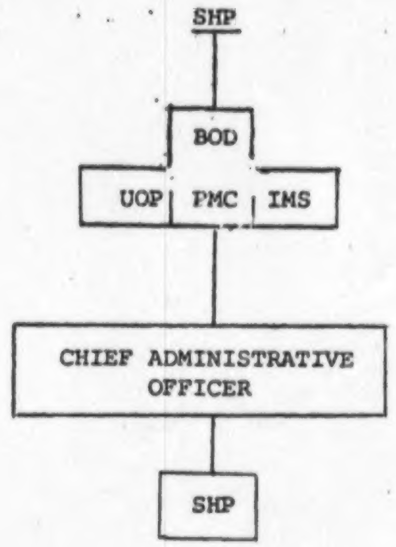
* Alternatively, contractual relationshi


UOP (Academic Responsibility)
SHP (Financial Responsibility)
BOR
PRESIDENT
ACADEMIC VICE PRESIDENT
PHARMACY
DENTISTRY
NURSING
SMS
HOD
Board representative of UOP, PMC, IMS, others - UOP majority or plurality
CHIEF ADMINISTRATIVE OFFICER
SHP
PMC
IMS

II. "SEPARATE CORPORATION" OPTION

FIGURE 3

++++ Contractual relationships for services, faculty, facilities, other resources


SHP
BOD
UOP
PMC
IMS
CHIEF ADMINISTRATIVE OFFICER
SHP

III. "JOINT VENTURE" OPTION:

New governing board composed of separate components - each corporate component remains responsible and financially liable

FIGURE 4

APPENDIX 5

(CITED IN CHAP. 5, VOL. I)

SAMPLE AFFILIATION AGREEMENT WITH CLINICAL FACILITIES FOR EDUCATIONAL EXPERIENCES FOR SHP STUDENTS

This Agreement, made and entered into this ____ day of ______________, 1978, by and between SCHOOL OF HEALTH PROFESSIONS at PACIFIC MEDICAL CENTER, a California non-profit corporation (hereinafter referred to as "School") and ________________ OUTCLINIC AND EMERGENCY CENTER (hereinafter referred to as "OAEC"

RECITALS

WHEREAS, Unit owns and operates an outclinic and emergency facility in the City of ________________ and County of ______________, State of California, and

WHEREAS, School, a California corporation, is a professional health care service educational institution located at 2340 Clay Street, San Francisco, California; and

WHEREAS, School desires to supplement its teaching program through clinical experience, more particularly by gaining access to the use of clinical facilities at OAEC; and

WHEREAS, OAEC desires to maintain and improve its existing high standards of care and medical education by affiliating with School; and

WHEREAS, it is to the mutual benefit of the parties that students enrolled in School's programs be afforded the opportunity to utilize the facilities of OAEC to supplement their learning experience.

NOW, THEREFORE, OAEC and School hereby agree as follows:

I. Subject to such reasonable rules and regulations as OAEC shall from time to time adopt, OAEC shall:

A. Afford to each student designated in writing by School pursuant to Article II hereof the opportunity to participate in mutually agreed upon types of health educational experiences which may be available to OAEC and will permit such students, as well as School faculty, access to mutually selected OAEC facilities for such periods of time and for such experiences as may from time to time be fixed by OAEC and School; provided, however, that the experiences to be afforded hereby shall take place in such a way as to avoid whenever possible interferences with normal OAEC routines;

B. Maintain the OAEC facilities to be used for the educational experiences provided by the Agreement so that the facilities shall at all times conform to the requirements of, and meet with the approval of, the American Hospital Association or similar reviewing body;

C. Designate lines of authority and communication for relations between the School faculty and OAEC personnel so as to carry out the purposes of the Agreement effectively and efficiently;

D. Permit members of the staff of OAEC to participate in clinical experiences to be afforded to the students of School; provided, however, that OAEC staff participation shall not in any way interfere with the usual routine of, or with necessary commitments to, the OAEC's care program; and

E. Provide on any day that a student is receiving clinical experience at the OAEC pursuant to this Agreement emergency health care for illnesses resulting from the participation by such student in the program, as well as first aid for accidents sustained by a student arising out of participation in said program; provided, however, that the sole and exclusive authority to determine the duration and extent of necessary emergency first aid shall be vested in OAEC and OAEC's determination in this regard shall be conclusive. In addition, the aforementioned emergency health care services shall also be provided to any member of the faculty of School participating in the program, on the same terms and conditions set forth above regarding students. All costs for such emergency first aid shall be paid by School.

II. School will:

A. Designate, in writing prior to the commencement of each clinical program, and sufficiently in advance to allow convenient planning by OAEC the names of those students registered for courses at OAEC;

B. Designate for participation in the program students who are in good health, to OAEC's satisfaction, at the time of program commencement;

C. Require each student to undergo health examinations and such other medical examinations and protective measures OAEC may from time to time require, and to be responsible for providing such examinations;

D. Retain exclusive responsibility for all instruction, supervision, control, evaluation and related matters concerning students participating in the clinical program at OAEC. Student discipline shall be the joint responsibility of School and OAEC;

E. Provide all educational supplies and equipment necessary for the instruction of students participating in the clinical program to the extent they are not customarily available at the OAEC, and be exclusively responsible for the care and control of all such educational supplies and equipment. To the extent OAEC provides supplies for students, cost reimbursement to OAEC will be made by School. OAEC will submit to School, on a monthly basis, itemized statements detailing the cost of supplies purchased for use by students enrolled in the clinical program, and upon receipt of same School shall forward the required payment immediately;

F. Enforce the rules, regulations and requirements governing the students participating in the clinical program, said rules, regulations and requirements to be agreed upon by School and OAEC.

III. School warrants that it carries policies of insurance placed with reputable insurance companies licensed to do business in the State of California which insure against the perils of bodily injury, personal injury, malpractice, and property damage, and cover such liabilities as are imposed by law and assumed under written contract with others. School shall continue to maintain such insurance in full force and effect during the term of this Agreement and carry a limit of liability of at least one million dollars ($1,000,000.00) per occurrence regardless of the number of persons or types of the above specified coverages involved.

School shall indemnify OAEC and its employees, students, agents and representatives, and hold it and them harmless from any acts of School's employees or students, and shall defend OAEC, its employees, students, agents and representatives from all claims, demands or actions for damages wherein it is alleged that liability exists by reason of the tortious acts of School's employees or its students. School shall further indemnify OAEC and its employees, students, agents and representatives, and hold it and them harmless for any accidents sustained by School's students during their affiliation with OAEC during the course of their normal activities to which they are assigned in the clinical program, and shall defend OAEC, its employees, students, agents and representatives from all claims, demands or actions for damages wherein it is alleged that liability exists by reason of such accidents.

School shall supply OAEC with Certificates of Insurance which evidence coverage in the amounts and for hazards as herein described. In addition, School shall waive all right of subrogation against OAEG as respects any liability, loss or damage to person, interest or property occasioned by persons or activity engaged in the performance of this Contract.

IV. Except as specifically provided in this Agreement, or in any subsequent amendment thereto, no monetary obligation on the part of the School or the OAEC is hereby created, consideration for this Agreement being furnished by the mutual promises of the parties. In addition, no payment will be made by either of the parties to student trainees, nor will any maintenance be furnished to student trainees without reimbursement.

V. The term of this Agreement shall commence on or after the _____ day of _______________, 1978. This Agreement may be terminated by either party upon six (6) months' written notice to the other in accordance with the provisions contained in Paragraph VI. Such termination shall not, however, be effective as to any student who, as of the date of mailing of a notice of termination by GAEC was enrolled in the program at School until the student has completed the clinical work required by the program.

APPENDIX 6

(CITED IN CHAP. 7, VOL. I)

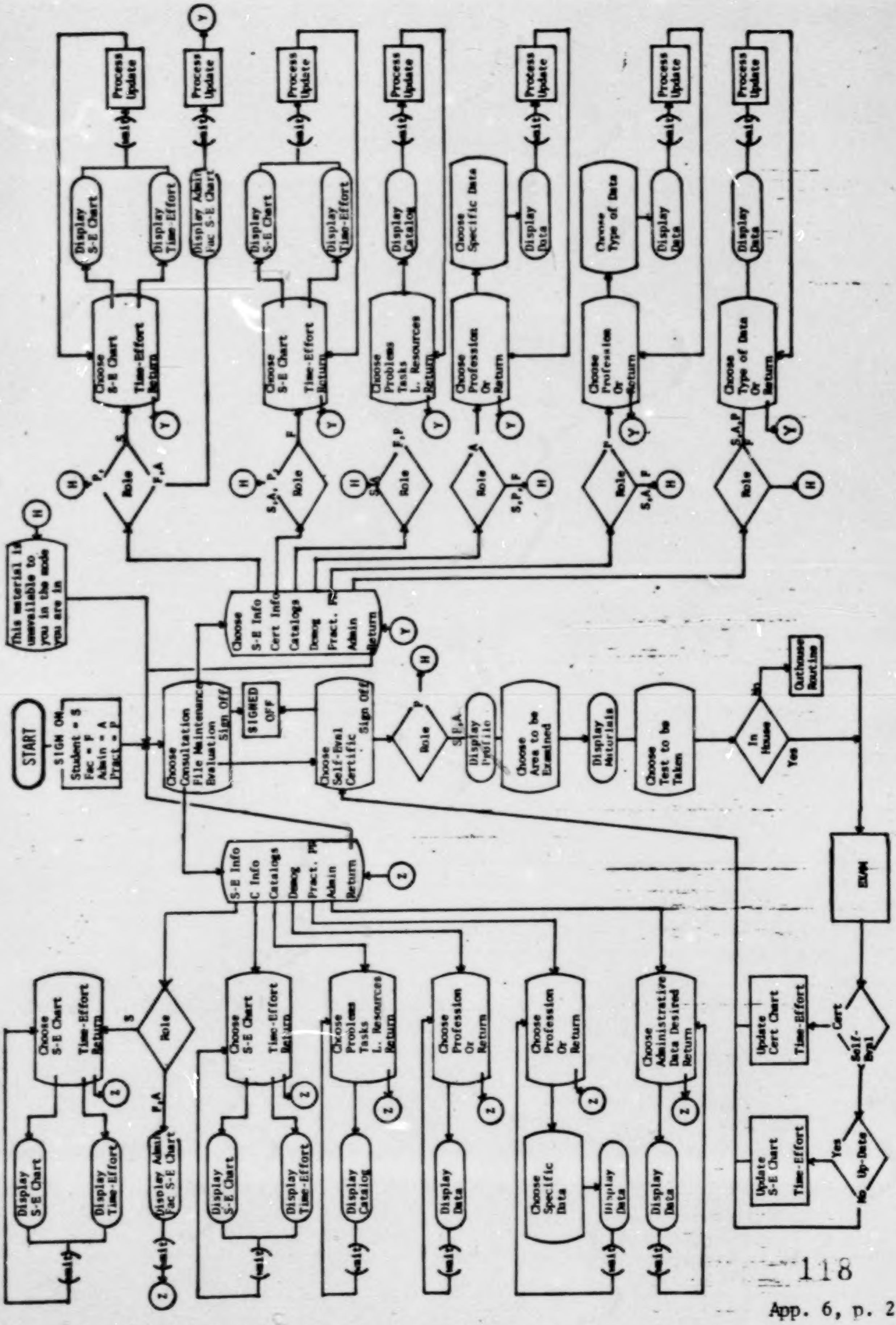
FLOW OF INFORMATION
WITHIN THE COMMUNICATIONS SYSTEM

The flow chart (Figure 1) describes the logical flow of computerized information to administrators, faculty, students and practitioners of the School.

The flow chart is divided into three sections: consultation, evaluation, and file maintenance. Each of these sections represents a way of interacting with the system. The consultation mode is used only for viewing information. Evaluation of any kind is done in the evaluation mode. Changes or updating of information occur in the file maintenance mode.

The following examples illustrate the use of the flow chart: A student who wishes to view his self-evaluation chart will first "sign on" at the terminal using a number which allows the computer to identify him as a student. The system responds by offering him the options for interaction. The student chooses the consultation mode to view the information. The student is then offered the choice of several files of data, which include self-evaluation information, certification information, and learning resources catalogs. He selects the self-evaluation information file that contains his self-evaluation chart and time-effort chart.

Since access to this file is restricted, the system must be sensitive to whomever is requesting the information. In this case, the student has been identified by his entering number before being allowed access to the file. None of the data in this file will be available to any other member of the School. Any attempts by an unauthorized person to view the file will result in a 'Material unavailable" message on the terminal screen. The reason for the security of the self-evaluation file is to ensure its use as a self-directional learning instrument. The student may, of course, request his adviser, a resource faculty member, or a fellow student to view his self-evaluation file.


START
SIGN ON
Student = S
Fac = F
Admin = A
Pract = P
Choose
Consultation
File Maintenance
Evaluation
Sign Off
SIGNED OFF
Choose
S-E Info
Cert Info
Catalogs
Demog
Fract. PR
Admin
Return
This material is unavailable to you in the mode you are in
Role
Choose
S-E Chart
Time-Effort
Return
Display S-E Chart
Display Time-Effort
Display Admin Fac S-E Chart
wait
Process Update
Choose
Problems
Tasks
L. Resources
Return
Display Catalog
Choose Profession Or Return
Choose Specific Data
Display Data
Choose Type of Data
Choose Type of Data Or Return
Choose Self-Eval Certific
Sign Off
Display Profile
Choose Area to be Examined
Display Materials
Choose Test to be Taken
In House
Yes
No
Outhouse Routine
EXAM
Cert
Self-Eval
Update Cert Chart Time-Effort
Up-Date
Update S-E Chart Time-Effort
S-E Info
C Info
Catalogs
Demog
Pract. PR
Admin
Return
Choose Administrative Data Desired Return
S
F,A
F, S
S,A, P
F
F,P
S,A
A
S,P, F
P
S,A, F
S,A,P
H
Y
Z

App. 6, p. 2

EXPLANATION OF FLOW CHART SYMBOLS

(1) ARROWS (→) - Indicate the direction of the information flow.

(2) RECTANGLES (▭) - Connote a display of information at the computer terminal, either for the user to make a choice or to observe the information he has requested.

(3) DIAMONDS (◇) - Signify a decision-point for the computer. The question being asked appears as the text of the diamond figure. There will always be at least two arrows coming out of a decision-point, each one having one answer to the question the computer is asking itself.

(4) (WAIT) - Represents the computer waiting for the user to respond. Following the response, the path continues on to the next point.

(5) CONNECTORS (○ ○→) - Connectors with arrows going into them tell the user to find a connector with the same letter and an arrow going out and begin the path from that point. Any connector with an arrow going out is unique. For example, the H in the upper left-hand corner of the flow chart is referenced at several places throughout the chart.

The center section of the flow chart describes the evaluation procedure. When a student decides to evaluate his performance in a particular area, he selects the evaluation mode and identifies the skill to be assessed. The system then displays the evaluation instruments and materials to assess this particular skill. These may be available on the local computer system (in-house) or on another system (external). The results of the interaction for certification will be automatically recorded if computerized instruments are used. If the student uses the self-evaluation chart, he can choose whether or not he wants his chart to be automatically updated. If non-computerized instruments are used in the evaluation, the results must be recorded in the file maintenance mode.

The right side of the flow chart illustrates how information will be changed and updated. An adviser who wants to update a part of the student's certification chart chooses this mode. The system then displays those files in which he is authorized to make changes (e.g., Certification Information), and he can select the Certification Information file. He then is identified by the system. In this case, only an adviser or resource faculty member can make changes in the student's certification data; anyone else will receive a "Material unavailable" message. He may choose either the certification chart or the time-effort record and make the necessary changes at the terminal. These changes are reflected in that specific file.

APPENDIX 7

(Cited in Chap. 10, Vol. I)

EXAMPLES OF PROBLEM, TASK, AND LEARNING RESOURCES CATALOGS

PROBLEM CATALOG

PROBLEMS	Physician	Nurse Practitioner	Social Worker	Dentist	Health Care Coordinator
Hypertension	X	X	X	X	X
-					
-					
Shortness of Breath	X	X	X	X	X
-					
-					
Drug Abuse	X	X	X	X	
-					
-					
Family Planning	X	X	X		X
-					

FIGURE 1

TASK CATALOG

HYPERTENSION

		Physician	Nurse Practitioner	Social Worker	Dentist	Health Care Coordinator
130006	Check Blood Pressure*	X	X		X	X
130673	Examine Eyes with Ophthalmoscope*	X	X			
130687	Examine Extremities for Pulses*	X	X		X	
120355	Counsel & Instruct Patient in Treatment of Essential Hypertension*	X	X	X	X	X
...						
...						
...						

* from Technomics, Inc.

FIGURE 2

LEARNING RESOURCES CATALOG-PROBLEMS

HYPERTENSION (Physician)

	LOCATION
A. GENERAL REFERENCES	
1. Textbook of Medicine, pp.	Learning Resources Center (LRC)
2. Textbook of Pathology, pp.	LRC
B. RELATED REFERENCES	
1. Cardiovascular Anatomy, pp.	LRC
2. Cardiovascular Dynamics, pp.	LRC
3. Control Mechanisms, pp.	LRC
-	
-	
-	
7. Cardiovascular Pathology	
Text Reference	LRC
Gross Specimens No. ___,___	LRC
Self-Instructional Text	LRC
C. ALGORITHM -- Existent	LRC
D. CLINICAL OR PRACTICAL EXPERIENCES (including simulations)	
1. Computer-Aided Simulation of the Clinical Encounter (CASE)	LRC
2. Patient-Management Problem	LRC
3 Clinical Unit	see Dr.__________
E. RESOURCE FACULTY	
1. See________________________	
2. See________________________	
-	
-	
-	

F. PERFORMANCE OBJECTIVES

- Given a series of patients, the student will be able to determine those with documented diastolic blood pressure above 94 on two or more occasions, rule out correctable causes, establish an appropriate diagnosis, outline a treatment plan, and identify those variables by which to monitor progress.

G. EVALUATION RESOURCES	
1. Self-evaluation	
PMP Nos. 8 & 9	LRC
CASE (Mr. Jones)	LRC
2. Certification	
See Dr.____________ (Criteria on file-LRC)	Hypertension Clinic

FIGURE 3

LEARNING RESOURCES CATALOG-TASKS

130673 EXAMINE EYES WITH OPHTHALMOSCOPE (Physician)

Related Patient Problems:

Hypertension
·
·
·
Cataract
·
·
Stiff Neck
·
·

LEARNING RESOURCES:	LOCATION
A. GENERAL REFERENCES	
1. Physical diagnosis text pp.	LRC
2. Self-instructional Unit	LRC
3. Simulation	LRC
B. RELATED REFERENCES	
1. Ophthalmology text, pp.	LRC
·	
·	
·	
C. CLINICAL OR PRACTICAL EXPERIENCES	
1. Eye Clinic	see Dr.__________
2. Hypertension Clinic	see Ms.__________
D. RESOURCE FACULTY	
1. See______________	
2. See______________	

E. PERFORMANCE OBJECTIVE

Given at least 5 patients and an ophthalomoscope, discriminate normal from abnormal ocular fundi and media, and describe any abnormalities.

F. EVALUATION	
1. Self-evaluation	
Slide test	LRC
Simulation	LRC
2. Certification	
See Dr.____________	Eye Clinic
(Criteria on file-LRC)	

FIGURE 4

APPENDIX 8

(CITED IN CHAP. 10, VOL. I)

PROBLEMS IN USING CATALOG APPROACH FOR TASKS

(Excerpted and adapted from "Report on a Feasibility Study for a School of Health Professions," University of the Pacific, San Francisco, November, 1973)

A major problem area in using the tasks and task catelogs for curriculum development and implementation concerns a determination of the most effective means for clustering tasks for learning and evaluation. How tasks are clustered can determine which tasks are learned or evaluated together, and in what sequence. For example, if the tasks in Appendix 9 are examined, it is evident that some tasks are potentially appropriate for any patient at any time, regardless of the specific problem or complaint. An example of such a task is "observe for patient's need to ventilate feelings." This task could be performed in virtually the same manner no matter what the patient's problem.

A second type of task is also potentially appropriate for any patient problem, but the specific knowledge needed to do the task would be determined by the problem. For example, there are several tasks that begin "counsel and instruct patient in the treatment regimen for ..." In these tasks, the counseling and instructing behaviors that are generic would be similar for any problem, but the specific content of that counseling and instruction would be dependent upon the particular problem. The specifics of the task for hypertension would differ from those for streptococcal pharyngitis.

A third task category includes tasks that potentially would be relevant or appropriate for a patient with any problem, but highly probable to occur only if he has certain ones. For example, it would be unlikely that one would "evaluate symptoms of patient complaining of urinary problems: if the patient's primary problem were an upper respiratory infection. Likewise, the health professional would be less likely to "evaluate patient's complaints or symptoms of pain" if his primary problem were relatively painless, such as hay fever. Similarly, a task may be relevant to a particular disease because that disease may be a special indication, or a contraindication, for the task. For example, "instruct patient on post-immunization care and schedule" may be particularly relevant if the patient has a skin problem.

These types of tasks suggest potential ways of clustering for purposes of learning and evaluation. For example, should students learn the generic skills of counseling and instruction, and then be observed on their performance with patients in two or three diseases? Should they take written examinations to test the knowledge required for adequate counseling in all the other diseases? The best way to organize tasks have not been determined; further analysis and creation of pilot segments of instruction and evaluation will be required in order to make these judgments.

APPENDIX 9

(CITED IN CHAP. 10, VOL. I)

TASK MATRICES

A. Introduction

Technomics, Inc., has developed and provided the planners with a matrix of tasks performed by the types of professionals considered for training by the School. The task data presented for physician assistants, social health technicians, and secretary-receptionists correspond to the tasks of the nurse practitioners, medical social workers, and health care coordinators, respectively, which the School is planning to train. Task data are also included for an ambulatory care nurse. Although this role is not included in the original model curriculum, tasks performed by this professional have been provided to identify important ambulatory care functions that may otherwise have been missed and could be performed by a different health professional.

Technomics' task data were gathered by a "task inventory" questionnaire. The inventory asked a practicing professional 1) to respond to each task with respect to whether or not he performs it, 2) how frequently he has performed the task in the last 30 days, and 3) approximately how long it takes him to do it. Although the sample sizes are relatively small, the task data have relatively high overall correlations of approximately 0.7 - 0.9 with additional studies conducted by Technomics using similar samples (Parks, 1973). The tasks in the inventory are drawn from a file consisting of 10,000 task statements (Parks, R. and P., 1972; Technomics, Inc., 1972). The information obtained from the task inventory for a single professional category forms a task profile. The task inventory has been shown to be a valid and reliable method for surveying what work a professional does (Technomics, Inc., 1972, 1973).

Two performance matrices appear in Attachment I to the November, 1973 report. The first matrix (1,004 tasks) lists those tasks which account for 95% of each profession's time. The second matrix (1,122 tasks) lists those tasks that account for the additional 5% of each profession's time.

Attachment II to the November, 1973 report presents a simplified listing of all 1,695* tasks for all the health professional types.

---

* It should be noted that the total number of different tasks in both matrices is 1,695, not 1,122 + 1,004 = 2,126, due to the overlap in tasks between the two series of listings in Attachment I.

This list was prepared by consolidating the data from the two series of listings into one statement. In addition, quantitative distinctions in performance amount professions were removed in order to determine quickly and easily whether or not a given health profession performed a particular task. To obtain the relative frequency of a task or the percentage of professions surveyed who performed it, the original data in Attachment I must be consulted. This Appendix contains excerpts from the two attachments.

Table 1 indicates the number of tasks that account for 100% of each profession's time (Hernandez, 1973). Relatively few tasks account for the majority of professional time. These data are consistent with those reported by the group at Columbia Health Center, Columbia, Maryland (Johns Hopkins Medical Institutions, 1972).

In Attachment II, tasks performed by podiatrists and pharmacists have been indicated. Data for these two professions were derived from the individual judgments of three podiatrists and one pharmacist. The results should be considered only a gross indication of which tasks already identified are likely to be performed by a podiatrist or a pharmacist. Additional tasks not previously identified were also added by the pharmacist.

Table 1

Number of Tasks Performed
Within Cumulative Time Spent on Tasks

	Cumulative Time	80%	80% 95%	95% 100%
Health Profession	Physician	175	127	159
	Nurse Practitioner	152	128	174
	Secy./Recep.	38	51	345
	Social Worker	217	190	253
	Dentist	125	181	418

The reason for identifying tasks for podiatry and pharmacy was to demonstrate the relative ease with which health professional programs could be added to the curriculum of the School. This would be accomplished by use of the matrix of problems and tasks already existing and by identifying new ones to create a task inventory to survey the profession to be added. The results of this first step suggest that many podiatric and pharmacy tasks are common to the curriculum, indicating that inclusion of additional primary care professions should not be difficult.

REFERENCES

Hernandez, Teresita, Personal Communication. June 1973.

Johns Hopkins Medical Institutions. "A Task Inventory for Non-Physician Health Teams in Primary Care," Baltimore, Maryland. (Mimeographed.)

Parks, Robert and Hernandez, Teresita, Personal Communication. June, 1973.

Parks, Robert and Parks, P. Job Analysis Techniques for Building Operation Manpower Models in the Health Care Delivery Industry. Presentation to N.A.T.O. Conference on Manpower Planning Models. Cambridge, U.K.: September, 1971.

Technomics, Inc. Job Analysis Techniques for Restructuring Health Manpower Education and Training in the Navy Medical Medical Department, Springfield: National Technical Information Service, U.S. Department of Commerce, 1972.

Technomics, Inc. "Reliability and Validity Tests for Data Collected Using Inventories," Excerped from Summary of Fourth Year Activity - A System Apporach to Navy Medical Education and Training. January 1973.

B. Excerpt of Task Matrix of Health Workers in Ambulatory Care Settings

(Provided by Technomics, Inc., McLean, Va., 1973)

NOTE: If there is no entry for a given professional under a given task and it seems likely this professional would perform that task, that entry probably appears in the task matrix that lists tasks accounting for the last 5% of worker time (Attachment I). "No entry" can also be explained if the task was not included in the original inventory, or if the health professional in question did not in fact perform the task.

TASK PERFORMANCE MATRIX
OF HEALTH WORKERS IN AMBULATORY CARE SETTINGS

BEST COPY AVAILABLE

THIS MATRIX CONSISTS OF TASKS PERFORMED BY THE SPECIFIED WORKER TYPES. THE ENVIRONMENT FROM WHICH THE WORKERS WERE DRAWN AND THE SAMPLE SIZE ARE GIVEN BELOW.

WORKER TYPE		ENVIRONMENT	SAMPLE SIZE
PHYSICIANS	(MD)	PRIMARILY SOLO PRACTICES	32
PHYSICIANS' ASSISTANTS	(PA)	"	61
NURSE	(RN)	"	12
SECRETARY/ RECEPTIONIST	(SECY)	"	44
SOCIAL HEALTH TECHNICIAN	(SOCW)	SAN FRANCISCO BAY AREA	42
DENTISTS	(DDS)	DENTAL CLINICS IN HOSPITALS & DISPENSARIES	198

ONLY TASKS WHICH ACCOUNT FOR 95% OF THE WORKERS' TIME ARE REPORTED HERE, AND THOSE TASKS WHICH ACCOUNT FOR LESS THAN 80% OF THE WORKERS' TIME ARE ASTERISKED.

THE MATRIX SHOWS THE PERCENT OF THE SAMPLE REPORTING DOING THE TASK (%DO), AND THE FREQUENCY OF TASK PERFORMANCE EXPRESSED AS NUMBER OF TIMES PER MONTH (F). A ''0'' ENTRY MEANS LESS THAN ''1''.

MAY 1973

TASK PERFORMANCE MATRIX
OF HEALTH WORKERS IN AMBULATORY CARE SETTINGS

TASK			MD		PA		RN		SECY		SOCW		DOS	
			%DO	F	%DO	F	%DO	F	%DO	F	%DO	F	%DO	F
28	110154	LIFT, TURN, OR POSITION PATIENTS WITH INJURIES					83	26						
29	110155	TRANSPORT/DRIVE PATIENT									89	12		
30	110156	ASSIST DRUG ABUSER TO WALK OFF EFFECTS OF DRUG									40 *	4		
31	120002	COUNSEL PARENTS ON CHILDREN'S BEHAVIOR	88	11	41 *	11					48 *	3		
32	120004	REINFORCE PATIENT'S POSITIVE RESPONSE TO THERAPY											37 *	29
33	120008	EXPLAIN/ANSWER QUESTIONS ABOUT DOCTOR'S INSTRUCTIONS TO PATIENT/FAMILY	72	45	97	30	100	49			79	10		
34	120010	EXPLAIN/ANSWER PATIENT'S QUESTIONS REGARDING EXAMINATION/TEST/TREATMENT PROCEDURES									74	9		
35	120012	EXPLAIN PHYSIOLOGICAL BASIS FOR THERAPY/TREATMENT TO PATIENT/FAMILY	100	49	84	25	83	37			60 *	6		
36	120014 ✓	EXPLAIN/ANSWER QUESTIONS ABOUT THERAPEUTIC DIETS TO PATIENT/FAMILY	88	35	70	14	58 *	17			50 *	4		
37	120016 ✓	EXPLAIN/ANSWER QUESTIONS ABOUT TREATMENT PROCEDURE VIA TELEPHONE	97	43	72	21	92	40	41 *	27	69	13		
38	120017	TEACH PATIENT MEDICATION STORAGE REQUIREMENTS,E.G. REFRIGERATION, EXPIRATION DATE									55 *	6		
39	120019	INFORM PATIENT OF PROGRESS OF THERAPY	97	54	77	21							62 *	23
40	120020	COUNSEL PRE-PARTUM MOTHERS					33 *	18			45 *	3		
41	120021	WRITE STANDARD INSTRUCTIONS FOR PATIENT CONCERNING EXAMINATIONS/THERAPY OR PROCEDURES											22 *	26

OF HEALTH WORKERS IN AMBULATORY CARE SETTINGS

		TASK	MD		PA		RN		SECY		SOCW		DDS	
			%DO	F	%DO	F	%DO	F	%DO	F	%DO	F	%DO	F
146	120255	CONFRONT PATIENT WITH INAPPROPRIATENESS OF HIS BEHAVIOR									45 *	4		
147	120296	EXPLAIN/PROVIDE INFORMATION TO PATIENT REGARDING THERAPY SESSION, E.G. QUESTIONS, DOUBTS									69 *	6		
148	120297	PARTICIPATE AS MEMBER OF GROUP IN GROUP THERAPY									50 *	1		
149	120331	ENCOURAGE GROUP DECISION/ACTION IN GROUP THERAPY									57 *	1		
150	120332	DISCUSS PATIENT'S COMPLAINTS DURING GROUP THERAPY									45 *	2		
151	120333	QUESTION PATIENT ABOUT SYMPTOMS AND POSSIBLE SIDE EFFECTS OF MEDICATION OR TREATMENT	100	45	97	18	75	27						
152	120334	EXPLAIN TO WAITING PATIENTS WHAT DELAY TO EXPECT WHEN RUNNING BEHIND SCHEDULE					100	48	73 *	27	62 *	10		
153	120335	EXPLAIN DOCTOR'S FEES TO PATIENTS	75 *	15					89	34	64	16		
154	120337	INSTRUCT PATIENT IN MEDICARE, MEDICAID BENEFITS AND ELIGIBILITY REQUIREMENTS					33 *	33	86	38				
155	120339	COUNSEL AND INSTRUCT PATIENT IN THE TREATMENT REGIMEN FOR ABRASIONS	94 *	21	95	17	92	16						
156	120340	COUNSEL AND INSTRUCT PATIENT IN THE TREATMENT REGIMEN FOR ACNE	88 *	6	70 *	8								
157	120341	COUNSEL AND INSTRUCT PATIENT IN THE TREATMENT REGIMEN FOR ACUTE BRONCHITIS	94	15	79 *	6								
158	120342	COUNSEL AND INSTRUCT PATIENT IN THE TREATMENT REGIMEN FOR ACUTE OTITIS MEDIA	97	18	85	13								

TASK PERFORMANCE MATRIX
OF HEALTH WORKERS IN AMBULATORY CARE SETTINGS

		TASK	MD		PA		RN		SECY		SOCW		DDS	
			%DO	F	%DO	F	%DO	F	%DO	F	%DO	F	%DO	F
223	130110	PERFORM CIRCULATION CHECK, E.G. COLOR, PULSE, TEMPERATURE OF SKIN, CAPILLARY RETURN	94	37	89	34	42 *	34						
224	130115	TAKE ELECTROCARDIOGRAPH (EKG,ECG)					33 *	7	16 *	21				
225	130116	TAKE INTRA-ORAL X-RAYS											32 *	27
226	130117	PALPATE UTERUS FOR LENGTH,STRENGTH AND FREQUENCY OF CONTRACTIONS	66 *	13										
227	130119	PALPATE UTERUS TO DETERMINE POSITION AND PRESENTATION OF FETUS	75	32	34 *	10								
228	130126	TAKE TWO STEP MASTER ELECTROCARDIOGRAPH			34 *	7								
229	130140	TAKE BITE-WING X-RAYS											32 *	24
230	130148	TAKE PERIAPICAL X-RAYS											38 *	30
231	130151	TAKE IMPRESSIONS FOR STUDY CAST											37	14
232	130187	TAKE WAX BITE REGISTRATION											23 *	13
233	130233	EXAMINE MOUTH AND PHARYNX FOR LESIONS, SORES, LEUKOPLAKIA	100	48	97	45							93	77
234	130238	WEIGH BABIES					83	35						
235	130240	CHECK FOR EDEMA (SWELLING) OF EXTREMITIES, EYES	100	48	98	41	83 *	20						
236	130244	PALPATE (FEEL) ABDOMEN FOR DISTENSION (HARDNESS/SOFTNESS)	57	49	97	38								
237	130245	PALPATE NECK FOR MASSES/NODES											67 *	29
238	130249	AUSCULTATE LUNGS TO DETECT ABNORMAL SOUNDS,I.E. RALES,WHEEZE,RONCHI	100	56	97	53								

OF HEALTH WORKERS IN AMBULATORY CARE SETTINGS

		TASK	MD		PA		RN		SECY		SOCW		DDS	
			%DO	F	%DO	F	%DO	F	%DO	F	%DO	F	%DO	F
570	148012	PRESCRIBE TREATMENT FOR TONSILLITIS	97	17	49 *	11								
571	148022	PRESCRIBE TREATMENT FOR CYSTITIS	97 *	12										
572	148031	PRESCRIBE TREATMENT FOR IMPETIGO			46 *	9								
573	148035	PRESCRIBE TREATMENT FOR MYOCARDIAL INFARCTION	91	6										
574	149024	PRESCRIBE MEDICATIONS											87 *	22
575	149102	PRESCRIBE SYMPTOMATIC TREATMENT FOR CONSTIPATION	47 *	21										
576	149103	PRESCRIBE SYMPTOMATIC TREATMENT FOR HEADACHE	97	26	49 *	14								
577	149107	PRESCRIBE SYMPTOMATIC TREATMENT FOR COLDS	97	37	57 *	18	33 *	38						
578	149108	PRESCRIBE SYMPTOMATIC TREATMENT FOR SORE THROATS	97	33	62 *	16	33 *	38						
579	149109	PRESCRIBE SYMPTOMATIC TREATMENT FOR FLU	97	24	56 *	12	50 *	19						
580	149111	PRESCRIBE SYMPTOMATIC TREATMENT FOR DIARRHEA	97	17	56 *	12	50 *	19						
581	149112	PRESCRIBE SYMPTOMATIC TREATMENT FOR NAUSEA AND VOMITING	97	20			33 *	26						
582	150002	DETERMINE PATIENT CARE ASSIGNMENT FOR INDIVIDUAL STAFF MEMBER									33 *	7		
583	150004	SELECT THERAPEUTIC EXERCISES FOR PATIENT	84 *	11			17	32						
584	150005	CONDUCT TEAM/WARD CONFERENCE (CLASS) ON PROBLEM/PROGRESS OF INDIVIDUAL PATIENT									67 *	3		

TASK PERFORMANCE MATRIX
OF HEALTH WORKERS IN AMBULATORY CARE SETTINGS

		TASK	MD		PA		RN		SECY		SOCW		DDS	
			%DO	F	%DO	F	%DO	F	%DO	F	%DO	F	%DO	F
636	150165	CONFER WITH NON-MEDICAL PERSONNEL ABOUT PATIENT TREATMENT/PROGRESS, E.G. WORK SUPERVISOR									79	12		
637	150166	EVALUATE SYMPTOMS OF PATIENT COMPLAINING OF CHEST PAIN	100	25	93	20	75	28						
638	150176	FOLLOW UP ON PATIENT'S WORK THERAPY TO DETERMINE PERFORMANCE, SATISFACTION									60 *	4		
639	150177	MEET WITH OCCUPATIONAL THERAPISTS/RED CROSS WORKERS FOR FEEDBACK ON PATIENT PERFORMANCE									57 *	2		
640	150181	ELICIT INFORMATION TO ASCERTAIN FAMILY'S UNDERSTANDING/ACCEPTANCE OF ILLNESS/TREATMENT	94	17	54 *	9	58	23			71	10		
641	150187	PARTICIPATE IN GROUP THERAPY FEEDBACK SESSIONS WITH STAFF									71	2		
642	150206	WRITE THERAPY PROGRESS NOTES									67	15		
643	150209	EVALUATE SYMPTOMS OF PATIENT COMPLAINING OF ABDOMINAL PAIN	100	25	92	18	75	31						
644	150210	EVALUATE SYMPTOMS OF PATIENT COMPLAINING OF NERVOUSNESS	100	30	84	10	75	25			57 *	6		
645	150211	EVALUATE SYMPTOMS OF PATIENT COMPLAINING OF CONSTIPATION	100	23	90	16	67 *	17						
646	150212	EVALUATE SYMPTOMS OF PATIENT COMPLAINING OF DEPRESSION									62 *	10		
647	150213	EVALUATE SYMPTOMS OF PATIENT COMPLAINING OF EAR TROUBLE	100	21	95	25	67	40						

		TASK	MD %00	MD F	PA %00	PA F	RN %00	RN F	SECY %00	SECY F	SOCW %00	SOCW F	DDS %00	DDS F
862	320386	COUNSEL PERSONNEL ON LEGAL MATTERS, E.G. PAYMENT OF DEBT									43 *	5		
863	320391	INSPECT FOR PROPER UTILIZATION OF FORMS BY PERSONNEL											14 *	1
864	320392	REVIEW MEDICAL/CASE RECORDS FOR COMPLETENESS, PROPER UTILIZATION									64	15		
865	320414	COMPLETE, SUBMIT AND FILE INSURANCE FORMS							68	41				
866	320416	ESTABLISH AND CONTROL PETTY CASH FUND							40	26				
867	320417	MAKE FINANCIAL ARRANGEMENTS WITH PATIENTS	20 *	4					66	32	52 *	7		
868	320418	DICTATE DISCHARGE SUMMARIES	81	19	48	29								
869	320419	DICTATE OPERATIVE SUMMARIES	53 *	12	8	34								
870	320420	ANSWER COMPLAINT LETTERS FROM PATIENTS							52 *	10				
871	320422	DRAFT LETTERS FOR DOCTOR'S SIGNATURE, E. G., LEGAL, DRAFT BOARD REFERRALS							50	13				
872	320423	WRITE ABSTRACT OF PATIENT'S MEDICAL HISTORY	81	9	44	9			36 *	25	64	14		
873	320424	FOLLOW UP ON LOST OR REJECTED INSURANCE CLAIMS							57 *	16	38 *	3		
874	320425	SUPERVISE OTHER EMPLOYEES/STUDENTS	78	33	20	38	50	39	30 *	25	21	16		
875	320427	ENTER TRANSACTIONS IN GENERAL JOURNAL					8	21	52	28				
876	320428	POST FROM GENERAL JOURNAL TO INDIVIDUAL LEDGER ACCOUNTS							55	35				

C. Excerpt of Simplified Task Listing of Health Workers in Ambulatory Care Settings

(Modified from matrices provided by Technomics, Inc., McLean, Va., 1973)

NOTE: If there is no entry for a given professional under a given task in either the 95% or 5% matrix and it seems likely the professional would perform that task, then the task was probably not included in the original inventory.

		Tasks	MD	NP	HCC	Soc W	DDS	Pharm	Pod
49	110154	lift, turn, or position patients with injuries			✓				✓
50	110155	transport/drive patient				✓			
51	110156	assist drug abuser to walk off effects of drug				✓		✓	
52	120002	counsel parents on children's behavior	✓			✓			
53	120004	reinforce patient's positive response to therapy						✓	✓
54	120008	explain/answer questions about doctor's instructions to patient/family	✓	✓	✓	✓		✓	✓
55	120009	explain ECG procedure to patient				✓			
56	120010	explain/answer patient's questions regarding examination/test/treatment procedures				✓		✓	✓
57	120012	explain physiological basis for therapy/treatment to patient/family	✓	✓	✓	✓		✓	✓
58	120014	explain/answer questions about therapeutic diets to patient/family	✓	✓	✓	✓	✓		✓
59	120016	explain/answer questions about treatment procedure via telephone	✓	✓	✓	✓	✓	✓	✓
60	120017	teach patient medication storage requirements, e.g. refrigeration, expiration date				✓		✓	
61	120018	explain x-ray procedures to patient							
62	120019	inform patient of progress of therapy	✓	✓	✓	✓	✓	✓	✓
63	120020	counsel pre-partum mothers				✓			

OF HEALTH WORKERS IN AMBULATORY CARE SETTINGS

		Tasks	MD	NP	HCC	Soc W	DDS	Pharm	Ped
201	120312	foster interaction between patients				✓			
202	120320	teach postural drainage exercises	✓	✓					
203	120331	encourage group decision/action in group therapy				✓			
204	120332	discuss patient's complaints during group therapy				✓			
205	120333	question patient about symptoms and possible side effects of medication or treatment	✓	✓	✓			✓	
206	120334	explain to waiting patients what delay to expect when running behind schedule			✓	✓		✓	✓
207	120335	explain doctor's fees to patients	✓	✓	✓	✓			✓
208	120337	instruct patient in medicare, medicaid benefits and eligibility requirements	✓	✓	✓			✓	✓
209	120338	counsel and instruct patient in the treatment regimen for abdominal pain				✓			
210	120339	counsel and instruct patient in the treatment regimen for abrasions	✓	✓	✓	✓		✓	✓
211	120340	counsel and instruct patient in the treatment regimen for acne	✓	✓	✓			✓	
212	120341	counsel and instruct patient in the treatment regimen for acute bronchitis	✓	✓	✓	✓		✓	
213	120342	counsel and instruct patient in the treatment regimen for acute otitis media	✓	✓				✓	
214	120343	counsel and instruct patient in the treatment regimen for acute tonsillitis	✓	✓	✓	✓		✓	

		Tasks	MD	NP	HCC	Soc W	DDS	Pharm	Pod
289	130070	determine exposure technique for x-ray series			✓		✓		
290	130075	give tuberculin mantoux test							
291	130076	give tuberculin tine test	✓	✓	✓				
292	130078	identify teeth on radiographs					✓		
293	130080	obtain patient's social and family history	✓	✓	✓	✓	✓	✓	✓
294	130081	obtain preliminary medical history, i.e. past/present complaints, allergies, medications			✓	✓		✓	✓
295	130082	make patient rounds or wards/section/unit/hospital	✓	✓			✓	✓	
296	130084	measure/weigh patient or personnel			✓	✓			✓
297	130087	identify and describe cardiac arrhythmias which appear on monitor and/or tracing strip	✓	✓	✓				✓
298	130092	point out possible abnormalities on x-ray film to doctor	✓	✓					✓
299	130094	identify/describe manifestations of loss of contact with reality, e.g. hallucinations, delusions	✓	✓	✓	✓		✓	
300	130095	determine patient's pattern of interaction with others				✓			
301	130097	observe/report symptoms of side effects to treatment/medication				✓			
302	130099	observe patient for/report and describe abnormal respirations				✓			
303	130100	observe patient for signs of chilling				✓			
304	130110	perform circulation check, e.g. color, pulse, temperature of skin, capillary return	✓	✓				✓	✓

OF HEALTH WORKERS IN AMBULATORY CARE SETTINGS

		Tasks	MD	NP	HCC	Soc W	DDS	Pharm	Pod
879	148042	prescribe treatment for gingivitis (trench mouth, vincent's)	✓	✓					
880	149024	prescribe medications					✓	✓	✓
881	149101	prescribe symptomatic treatment for indigestion/ heartburn				✓			
882	149102	prescribe symptomatic treatment for constipation	✓	✓	✓	✓		✓	
883	149103	prescribe symptomatic treatment for headache	✓	✓	✓	✓		✓	
884	149107	prescribe symptomatic treatment for colds	✓	✓	✓	✓		✓	
885	149108	prescribe symptomatic treatment for sore throats	✓	✓	✓	✓		✓	
886	149109	prescribe symptomatic treatment for flu	✓	✓	✓			✓	
887	149111	prescribe symptomatic treatment. for diarrhea	✓	✓	✓	✓		✓	
888	149112	prescribe symptomatic treatment for nausea and vomiting	✓	✓	✓	✓		✓	
889	149114	prescribe symptomatic treatment for hangovers				✓			
890	150002	determine patient care assignment for individual staff members				✓			
891	150004	select therapeutic exercises for patient	✓	✓					✓
892	150005	conduct team/ward conference (class) on problem/progress of individual patient				✓	✓	✓	
893	150006	consult doctor or nurse to obtain information/advice on patient care	✓	✓	✓	✓	✓	✓	
894	150007	coordinate treatment plan or chronically ill child with school	✓	✓	✓	✓			

		Tasks	MD	NP	HCC	Soc W	DDS	Pharm	Pod
965	150177	meet with occupational therapists/red cross workers for feedback on patient performance				✓			
966	150181	elicit information to ascertain family's understanding/acceptance of illness/treatment	✓	✓	✓	✓			
967	150187	participate in group therapy feedback sessions with staff				✓			
968	150206	write therapy progress notes							
969	150209	evaluate symptoms of patient complaining of abdominal pain	✓	✓	✓	✓			
970	150210	evaluate symptoms of patient complaining of nervousness	✓	✓		✓			
971	150211	evaluate symptoms of patient complaining of constipation	✓	✓	✓	✓			
972	150212	evaluate symptoms of patient complaining of depression				✓			
973	150213	evaluate symptoms of patient complaining of ear trouble	✓	✓	✓	✓			
974	150214	evaluate symptoms of patient complaining of eye trouble, e.g. red eye	✓	✓	✓	✓			
975	150215	evaluate symptoms of patient complaining of indigestion	✓	✓	✓	✓			
976	150216	evaluate symptoms of patient complaining of muscle pain	✓	✓	✓	✓			
977	150217	evaluate symptoms of patient complaining of nasal of sinus problems	✓	✓	✓	✓			

OF HEALTH WORKERS IN AMBULATORY CARE SETTINGS

		Tasks	MD	NP	HCC	Soc W	DDS	Pharm	Pod
1420	320403	administer budget					✓		
1421	320407	recommend change in manpower levels					✓		
1422	320413	arrange for external and internal custodial care of building	✓	✓	✓				
1423	320414	complete, submit and file insurance forms			✓				
1424	320415	reconcile bank statements	✓		✓				
1425	320416	establish and control petty cash fund			✓				
1426	320417	make financial arrangements with patients	✓	✓	✓	✓			
1427	320418	dictate discharge summaries	✓	✓					
1428	320419	distate operative summaries	✓	✓					
1429	320420	answer complaint letters from patients			✓				
1430	320422	draft letters for doctor's signature, e.g. legal, draft board referrals	✓	✓	✓				
1431	320423	write abstract of patient's medical history	✓	✓	✓	✓			
1432	320424	follow up on lost or rejected insurance claims			✓	✓			
1433	320425	supervise other employees/students	✓	✓	✓	✓			
1434	320426	compute and submit tax returns			✓				
1435	320427	enter transactions in general journal			✓				
1436	320428	post from general journal to individual ledger accounts			✓				
1437	320429	balance books			✓				

APPENDIX 10

(CITED IN CHAP. 10, VOL I)

TASK UTILIZATION PROBLEMS

(Excerpted and adapted from "Report on a Feasibility Study for a School of Health Professions," University of the Pacific, San Francisco, November, 1973)

In proposing to use tasks to develop an empirically based curriculum, several potential problem areas have been identified.

Perhaps the most obvious and frequent criticism of the proposed curriculum plan is that it does not appear to provide a strong foundation in the basic sciences because the familiar organizing principles are not used. Despite the fact that it will not be organized on the basis of organ systems, or areas of biomedical and clinical knowledge, the curriculum will include the basic science required of every health professional. However, for both licensure and accreditation purposes, it may be necessary to identify organizers that will relate the tasks and problems of the curriculum to a more familiar sturcture.

The staff has explored with Technomics several ways in which their data can be manipulated so that tasks included in the curriculum of the School could be organized in a familiar way. One is to cluster tasks by use of an indexing system now under development. Each task in their file is being indexed with descriptors such as parts of the body or organ systems involved, symptoms or signs involved, and psychomotor skills or lab tests used in the performance of that task.

Another possible organization scheme that might provide a more familiar rationale to students is the clustering of tasks aroung the basic steps in health care problem-solving as modified from Weed's problem-oriented approach.[1] Analysis of the task profiles has yielded six steps representing generic areas of performance into which the tasks could be categorized: (1) acquisition of appropriate data; (2) formulation of problems from data; (3) formulation, implementation, and/or evaluation of success of plans for diagnosis, management and patient education; (4) recording data, problems, plans, or progress; (5) communication with patients and colleagues; (6) performance of administrative tasks.

The Health Services Mobility Study,[2] (directed by Eleanor Gilpatrick) has done productive and interesting work in attempting to provide a basis for organizing a curriculum from task analysis studies. Gilpatrick and her colleagues have devised scales for classifying the level of skills and knowledge required for a particular task, and have developed a taxonomy for organizing that knowledge. Further work with the Health Services Mobility Study staff based on their scaling techniques and taxonomy may provide solutions to the clustering problem.

Other ways of clustering the tasks may be identified as study and development proceed. Ideally, explicit criteria can be developed for each task category, denoting the purpose of each grouping as it relates to health care and making it a meaningful learning module.[3]

In addition to the clustering problem, another problem area has been identified in working with the task profiles. In task analysis, the task is the basic unit of performance. Systematic generation of a curriculum from task analyses is easier if the basic unit - a task - is clearly defined. This gives uniformity to all tasks, making them more amenable to further analysis for curriculum development. Technomics, although developing extensive and specific task lists, chose not to use a rigorous definition of task but, rather, to rely on statements by health workers confirmed by expert representatives of the profession. As a result, the Technomics tasks vary in scope and level of detail. Thus, systematic generation of curriculum material is made difficult and the analysis of the task into its component parts becomes cumbersome. The exact statement may need to be expanded, made more specific, or modified in some way to make it more useful.

For example, it is often important to go from the task statement itself to more specific behaviors that would enable a student to perform these tasks. The task "evlauate signs and symptoms of congestive heart failure" requires, as enabling skills or knowledge, learning what the signs and symptoms of congestive heart failure are, how to recognize them, and how to discriminate them from similar signs or symptoms that are not indicative of congestive heart failure. Like the knowledge needed for a given task, this information is often generated rationally from the best judgments of experts rather than empirically determined from observation and interview of the performers. It is hoped that work from the Health Services Mobility Study can also provide guidance in making these transitions more effectively.

Another aspect of the task definition problem concerns interpretation of what a task involves. For example, the task "counsel and instruct patient in treatment of hypertension" can be interpreted differently for a physician that for a health care receptionist or secretary. It also becomes tempting to add implicit task statements that are suggested by an empirically determined one. While productive and useful, these additions can take the curriculum further away from the data on which it is based.

FOOTNOTES

[1] Lawrence Weed, Medical Records, Medical Education, and Patient Care (Chicago: Year Book Medical Publishers, 1971).

[2] C. Gullion and E. Gilpatrick, The Design of Curriculum Guidelines for Educational Ladders Using Task Data, Health Services Mobility Study Working Paper No. II (New York: Hunter College and The Research Foundation, City University of New York, 1973).

[3] Mary Morgan, Personal Communication, July 1973.

APPENDIX 11

(CITED IN CHAP. 10, VOL. I)

EXAMPLES OF TASK DESCRIPTIONS AND EXTENDED TASK NAMES

(Prepared by Health Services Mobility Study, New York, New York
in conjunction with School of Health Professions, 1974)

MD TASKS FOR OBESITY (EXTENDED NAMES)

Code 1002

Diagnosing any adult pt. for obesity, determining etiology, and deciding whether to go ahead with treatment planning by explaining obesity to pt.; taking medical, family and social history; evaluating emotional state; comparing pt.'s weight with ideal weight; examining pt.; ordering tests, evaluating results; determining endogenous, exogenous etiology of obesity, psychological contraindication and/or concurrent medical disorders; determining whether to refer pt. for special treatment or encourage treatment planning; arranging to commence treatment planning if so decided.

Code 1003

Diagnosing a pediatric or adolescent pt. for obesity, determining etiology. and deciding whether to go ahead with treatment planning by explaining obesity; taking medical, family and social history; evaluating emotional state; related family problems; comparing pt.'s weight growth norms; examining pt.; ordering tests, evaluating results; determining endogenous, exogenous etiology of obesity, psychological contraindication and/or concurrent medical disorders; determining whether to refer pt. for special treatment or encourage treatment planning; enlisting family cooperation; arranging to commence treatment planning if so decided

Code 1004

Instructing adolescent or adult patient in preparation of daily food intake history and/or activity chart for use in obesity control by explaining purposes to patient; teaching how to fill in food intake under categories of what, when, how much, social and emotional content; teaching use of calory converter; teaching energy expenditure record keeping, and use of energy cost converter; reinforcing need for accurate information; providing charts; recording what was done and insights for treatment planning.

Code 1005

Instructing parent or guardian of pediatric patient in preparation of daily food intake history and/or activity chart for use in obesity control

TASK IDENTIFICATION SUMMARY SHEET

This is task ___ of ___ for this performer.
Code 1002 This is page 1 of 7 for this task.

Performer's Name __________ Analyst(s) __________ Dept. Obesity
Job Title __________ Institution Primary Care Date April, '74

1. What is the output of this task? (Be sure this is broad enough to be repeatable.)

Patient explained nature and problems of obesity; diagnosis made of patient's obesity and the degree; patient's relevant case history data collected; patient examined; tests ordered for determining endogenous etiology of obesity, psychological contraindication to treatment, and medical problems; recommendation made for medical care, psychological care, and/or treatment planning for obesity control.

2. What is used in performing this task? (Note if only certain items must be used. If there is choice, include everything or the kinds of things chosen among.)

Patient's chart, medical records; test and lab reports; standard charts or atlas on ideal weight; order forms; pen; stethescope; examination room and equipment

3. Is there a recipient, respondent or co-worker involved in the task? Yes...(x) No...( )

4. If "Yes" to q. 3: Name the kind of recipient, respondent or co-worker involved, with descriptions to indicate the relevant condition; include the kind with whom the performer is not allowed to deal if relevant to knowledge requirements or legal restrictions.

Adult pt. referred for obesity problem; primary care practitioner; specialists in endocrinology, neurology, psychology, psychiatry; clerk; patient's family.

5. Name the task so that the answers to questions 1-4 are reflected. Underline essential words.

Diagnosing any adult pt. for obesity, determining etiology, and deciding whether to go ahead with treatment planning by explaining obesity to pt.; taking medical, family, and social history; evaluating emotional state; comparing pt.'s weight with ideal weight; examining pt.; ordering tests, evaluating results; determining endogenous/exogenous etiology of obesity, psychological contraindication, and/or concurrent medical disorders; determining whether to refer pt. for special treatment or encourage treatment planning; arranging to commence treatment planning if so decided.

List Elements Fully

Performer receives the medical chart for an adult patient to be seen regarding diagnosis and possible treatment planning for obesity as a result of:

a. Request by patient.
b. Referral from another physician (such as surgeon or obstetrician, to prepare for surgery, medical treatment or diagnostic procedures, or to avoid danger to the fetus).
c. *At suggestion of performer or another staff member after visible adiposity was flagged for attention.

1. Performer reads the patient's chart to become familiar with the case or to review case material seen earlier, depending on whether this is a new patient, a referral, or a patient regularly treated by the performer.
   a. Notes patient's age, sex, last weight entered.
   b. Notes any comments relevant to the case including reasons for referral (such as impending surgery, desirability of weight reduction in preparation for a treatment or diagnostic procedure, pregnancy); notes whether visit was initiated by patient.
   c. Notes whether patient is suffering from chronic conditions involving the liver, gallbladder or kidneys, whether patient has history of diabetes, cardio—

6. Check here if this is a master sheet..( )

*We assume that for other tasks (between Code No. 1001 and this) the referral or suggestion was made.

TASK IDENTIFICATION SUMMARY SHEET (continued)

This is task ___ of ___ for this performer.
This is page 2 of 7 for this task.

Performer's Name ______________ Analyst(s) ______________ Dept. Obesity
Job Title ______________ Institution Primary Care Date April, '74

List Elements Fully

vascular disease, respiratory difficulties, emphysema, stroke, hypertension, arthritis, cancer, or other conditions which are increased in incidence or severity by obesity.

d. Performer notes whether any relevant laboratory tests have been recently ordered, and, if so, their results.

2. Performer has patient escorted into performer's office or examination room; asks patient to be seated. Performer asks the patient about his or her reasons for the visit as seen from the patient's point of view.

    a. Determines by conversation whether the patient is concerned with the problem of obesity and why.
    b. Determines whether there were external pressures on the patient to come for the visit and patient's attitude. May record.

3. Performer explains the test and what will happen in layman's language, and checks to be sure that patient understands what is involved in the diagnosis of obesity. Explains what obesity is and the need to determine the reasons. States the likelihood of the causes found in the general population. Indicates how a cooperative effort can be made to prepare a program of treatment and control. Answers patient's questions.

    a. With a patient referred for a specific medical reason, performer explains the connection between obesity and the proposed surgery, procedure, or the effects, for a pregnant patient, on the fetus and delivery.
    b. With a patient already diagnosed for a disease exacerbated by obesity, performer explains the effects and the possibilities of reversing the symptoms with weight reduction as appropriate.

List Elements Fully

    c. With a patient who has been flagged for the visit and has neither requested this spontaneously nor been referred, performer explains the medical implications of obesity in connection with other diseases and longevity. Emphasizes the possibility of prevention of (*concurrent diseases or ability to reverse health liabilities.
    d. Performer may talk with self-motivated patient about reasons for coming and attempt to ascertain patient's expectations of what can be accomplished.
    e. Performer may discuss the nature of obesity, its causes, treatments, and problems of relapse. Discusses the probable need to redesign dietary, recreational and/or emotional habits and life patterns.

4. If performer has not recently taken a full and focused case history from the patient, performer prepares to do this at the interview with the patient:

    a. Performer may use case history forms or make notes as desired.
    b. Performer explains to patient that the questions to be asked may seem irrelevant, but are designed to give an overall picture of the patient's medical, family, and social background so that the possible origin of any obesity may be understood and properly controlled.
    c. While performer asks the case history questions and notes responses, performer is also alert to indications of the patient's emotional and neurological state of being. Notes patient's attitudes towards health and social problems, areas of possible severe neurosis or dysfunction, tension, signs of neurological problems, abnormal speech patterns and slurring.

(*Is this correct word? collateral?

TASK IDENTIFICATION SUMMARY SHEET (continued)

This is task ___ of ___ for this performer.
This is page 3 of 7 for this task.

Performer's Name ____________ Analyst(s) ____________ Dept. Obesity
Job Title ____________ Institution Primary Care Date April, '74

List Elements Fully

d. Performer asks about patient's medical history, including childhood illnesses, endocrine problems, early growth and weight experiences; asks about adult illnesses (chronic and acute), surgery and any complications, accidents, orthopedic problems, and allergies. With women, ascertains date of last menstrual period and type of birth control being used (if any).

e. Asks what medications patient is currently taking including over-the-counter drugs; asks about attempts by patient to use appetite suppressents, history with weight reducing diets. Probes carefully to discover whether patient uses narcotic, hypnotic, or other addictive drugs.

f. Performer asks about the patient's family history, including marital status and history, parents, children, and siblings. Inquires about illnesses among family members, weight histories, causes of death. Asks about income level, food preferences and eating habits including ethnic preferences.

g. Performer asks patient about education, occupation, and sense of self in relation to work, housing, and income level; asks about tensions, stress. Asks about military history if any. Asks whether patient is sexually active, history of VD, pregnancy, abortion, as appropriate; asks about use of alcohol, tobacco.

h. Asks patient about areas of satisfaction, hobbies, recreation; asks specifically about regular exercise taken or not taken. Ascertains whether food is seen as a source of pleasure and/or a way to relieve anxiety or pain.

i. Asks patient to report any health concerns such as fatigue, energy loss, pain, headaches, dizziness, depression, or any disfuntions either physical, mental or emotional.

List Elements Fully

j. If asked by patient about relevance of questions, performer explains their connection with the diagnosis and control of obesity or related problems.

5. Performer explains that the patient will now be given examination for formal diagnosis of obesity. Explains what will happen.

* a. May have patient given gown or robe in preparation for examination.

* b. Has patient weighed and has height measured, or decides to do personally.

* c. May have patient's skin fold thicknesses measured at given locations with calipers, or decides to do so personally.

* d. If performer considers that the patient's muscle bulk is greatly above or below normal and the proportion of muscle to fat may be below or exceed normal limits, performer may order a series of skeletal measurements. These could include wrist, knee circumferences, shoulder and hip widths. May decide to do personally.

6. When the data for the diagnosis of obesity have been collected and recorded, performer analyzes the results:

a. Performer obtains standard charts, or reference texts or atlases, depending on the types of measurements used.

b. For height and weight measurements, performer identifies the patient's body type or frame caliber as small, medium or large. Selects the appropriate chart of optimal weight (not average) according to body type and sex. Finds the patient's height in the table and then compares the patient's actual weight with the optimal weight listed. Records optimal weight as appropriate.

*Each creates a separate task,

TASK IDENTIFICATION SUMMARY SHEET (continued)

This is task ___ of ___ for this performer.
This is page 4 of 7 for this task.

Performer's Name ____________ Analyst(s) ____________ Dept. Obesity
Job Title ____________ Institution Primary Care Date April, '74

List Elements Fully

c. For skin fold thickness measurements, performer enters the appropriate standard tables listing skin fold thicknesses (in centimeters) for various parts of the body.* Compares the patient's actual weight with the optimal weight listed. Records optimal weight as appropriate.

d. For skeletal measurements, performer calculates figures for patient's size based on the width and depth of the body and the heaviness and size of the skeletal framework as directed by the textual reference being used. Uses this to enter tables and find patient's optimal weight. Records optimal weight as appropriate.

?

e. If patient's weight is above the optimal weight, performer calculates the patient's weight as a percentage of the optimal weight. Records. Performer notes whether the percentage above 100% of optimal weight falls beyond 10 to 15 percent. If so, performer notes that patient is seriously obese. Records judgment.

f. If patient's weight is at or below optimal weight performer records.

7. Performer rejoins patient in office or examination room.

a. Reports results of obesity measures. May show patient the standard references used and explain.

b. If the patient is above 15 percent obese, is pregnant, or has a history of hypertension, diabetes, or hyperlipidemia (high concentration of lipids in the blood) with obesity, stresses the need to determine the source of the obesity problem and design a treatment plan. Performer stresses the health hazards involved. Performer reassures patient that something can be done. Suggests the need to make [illegible]me routine tests and have examination (if appropriate) before treatment planning.

c. If the patient is less than 15 percent overweight with no current overt disease symptoms, performer may indicate to patient the desirability of achieving an optimal weight as a preventive measure. Suggests routine tests and examination as appropriate.

d. If the patient is at or below optimal weight, performer indicates this to patient and discusses patient's reaction to the news. Performer notes whether patient continues to show signs of anxiety about weight. Reassures; considers the possibility of *anorexia nervosa or a compulsive obsession with body weight. May decide to recommend follow up diagnosis or counseling for the anxiety.

Sel fol[illegible]

8. If patient has been diagnosed as obese, performer ascertains whether patient is willing to undergo an examination and a series of screening tests to determine whether the cause(s) of the obesity are endogenous (organic) or exogenous (due to psycho-social factors). Explains that, whatever the remote causes, obesity is always the result of (caloric) food intake in excess of bodily (energy) needs, but that it is important to rule out any organic causes. Indicates that it is also necessary to determine whether there are any complicating medical conditions present which relate to the obese condition or would interfere with any program of increased exercise.

9. Performer decides on what medical examination items are required depending on current records and the patient's sex, age, medical history, current complaints, and degree of obesity. Decides on the aspects of the relevant physical

---

*Is this the name of the disease of girls who diet compulsively?

TASK IDENTIFICATION SUMMARY SHEET (continued)

This is task ___ of ___ for this performer.
This is page 5 of 7 for this task.

Performer's Name ________ Analyst(s) ________ Dept. Obesity
Job Title ________ Institution Primary Care Date April, '74

List Elements Fully

examination to do personally and which to have done by another member of the staff. Includes any or all of the following:

- *i) Pelvic examination (for female).
- *ii) Vital signs; specifies arm(s), position, if appropriate.
- *iii) EKG examination; specifies whether with exercise.
- *iv) EEG examination.
- *v) Chest radiography (PA and lateral, on inspiration).

10. In addition to the examinations ordered or done personally, performer personally examines the patient and collects additional information from the patient. Performer may examine or do any or all of the following depending on the information already collected:

    a. Performer talks with patient and remains alert for any accumulating evidence of any psychological disorders that might be severe enough to contraindicate a weight reduction program before psychological or psychiatric referral.

    b. Notes whether patient's interests are so limited that loss of food satisfaction without a replacement will leave the patient with little or no source of pleasure, thus indicating the need to proceed with caution.

    c. Performer attempts to get to know the patient and develop rapport and confidence throughout the procedure to ensure maximum future success for any treatment plan.

    d. Performer examines the skin for signs of cyanosis, abnormal texture or a scratched or infected appearance, using sight and touch. Looks for lesions.

    e. Performer has patient stand, and observes the distribution of fat on the body. Notes any gross deformities and development of sex characteristics. Mentally compares with normal fat distributions and those symptomatic of endocrine disorders such as adiposogential dystrophy, hyperadrenocorticism (Cushing's syndrome), etc. May ask about suddenness or timing of onset of obesity. Notes muscle tone.

    point ?

    f. Performer notes whether hair is coarse, voice hoarse, and skin dry as signs of thyroid disorder.

    g. Performer examines patient's head and neck; palpates thyroid and external lymph nodes; asks about headaches, dizziness, vision.

    h. Performer examines patient's chest:

    (*?) Please expand with appropriate language

    - i) Asks about chest pain, difficulty in breathing, reaction to exertion.
    - ii) Evaluates breast formation. May inspect for size, shape, symmetry; palpates to determine tenderness, nodes, lumps. Examines patient both sitting and supine, with arms extended above head.
    - iii) Examines chest wall and lungs. Listening with stethescope as patient respirates to note respiratory movement, breath sounds, other sounds. (?)
    - iv) Palpates and percusses chest; listens for pulmonary resonance, lung position. (?)
    - vii) Examines heart with patient in various positions to evaluate precordium, thrills, pericordial pulsations, and pulsations at selected arterial and venous points. (*?)
    - vi) Percusses heart borders and listens with stethescope to rate, rhythm, and character of systotic, diastotic and other heart sounds. Listens for murmurs. (?)

Do these need elaboration?

TASK IDENTIFICATION SUMMARY SHEET (continued)

This is task ___ of ___ for this performer.
This is page 6 of 7 for this task.

Performer's Name ______________ Analyst(s) ______________ Dept. Obesity
Job Title ______________ Institution Primary Care Date April, '7

List Elements Fully

i. Performer examines, palpates and/or percusses abdomen to evaluate condition, location of liver, spleen, urinary bladder.
j. Inspects external genetalia and notes degree of dystrophy.
k. Inspects extremities for varicose veins, signs of arthritis, flat feet. Asks about back trouble, sprains, strains, fractures.

11. Performer evaluates the findings of the physical examiantions performed personally or by staff and decides what additional lab. tests to order, depending on the information collected and the conditions suspected. Performer may arrange to have any or all of the following carried out:

Each reates .sep- arate task

⊛ a. May decide to order tests which require prior fasting by patient. If so, arranges to have patient instructed in prior preparation and scheduled or decides to do personally.

⊛ b. May order any or all of the following blood tests depending on the pathology suspected. (May arrange to have blood sample taken and prepared for lab.):

⊛ i) Fasting, or 2-hour post-prandial test for blood sugar.
ii) Blood count.
iii) Fasting blood serum lipid studies (for cholesterol, phospholipids, triglycerids).

s this a lood est? → ⊛? iv) Protein-bound iodine test. (?)

⊛ c. May order urine tests depending on condition being investigated:

s this ipstick test? → i) Fasting urinalysis test for sugar. (?)
s this urine test? → ii) Test for pregnancy. (?)

d. Arranges for tests. May sign requisition sheets or order as appropriate.

List Elements Fully

12. When radiographic EKG, EEG and lab. results are ready, performer interprets the reports accompanying them in relation to the examination records and own impressions. Determines whether there is evidence of an endogenous cause of the obesity such as endocrine or neurological disorder or pregnancy.

a. Performer may decide to refer patient to neurologist, endocrinologist, psychologist or psychiatrist for further specialized testing.
b. Performer has patient scheduled for a consultation visit if referral is decided. Discusses reasons with patient; explains; arranges referral if appropriate.
c. Performer writes out requisition or referral information and arranges to have relevant records sent or discusses personally with specialist.
d. If appropriate, cooperates with specialist in selecting diagnostic tests.
e. Reviews reports from specialists as soon as they are ready.

13. When the performer has all the diagnostic data deemed needed to determine the possibility of endogenous organic causes for the obesity, the presence of complicating diseases, or the likelihood of serious psychological dysfunction, performer arranges to have patient scheduled for a consultation.

14. At consultation performer discusses the diagnostic-etiologic data and presents conclusions;

a. If performer believes that there are serious psychological problems to be dealt with prior to obesity management, explains reasons and offers to arrange for a referral.

TASK IDENTIFICATION SUMMARY SHEET (continued)

This is task ___ of ___ for this performer.
This is page 7 of 7 for this task.

Performer's Name __________ Analyst(s) __________ Dept. Obesity
Job Title __________ Institution Primary Care Date April, '74

List Elements Fully

Discusses what can be done with patient and helps patient evaluate alternatives for psychotherapy.

- i) May refer patient for counseling regarding available services, or decides to do personally.⊛
- ii) May offer to talk with members of patient's family and does so if asked when appropriate. Explains situation, as required, to enlist the support of the patient's family.

b. If the diagnostic data have resulted in a positive diagnosis of endogenous or organic etiology of the obesity, performer explains this to patient and suggests referral to an appropriate specialist for treatment. Arranges for referral or counseling as described above.⊛

c. If the diagnostic data have ruled out the likelihood of an organic, endogenous etiology, performer reports on the results and on the general health of the patient as determined by the diagnostic and screening tests:

- i) Indicates areas of normal and abnormal functioning.
- ii) Indicates relationship to obesity and/or need to manage aspects of life such as energy expenditure, diet. Discusses patient's ability to exercise or need to have a restricted diet in relation to condition.
- iii) Depending on the results, may refer patient to specialist for treatment of specific disease or pathology as described above. If performer determines that it is appropriate to embark on a weight reduction program, performer describes what would be involved in such planning and attempts to obtain patient's agreement and motivation to do so. Stresses the benefits and indicates the dangers in not doing so. Indicates the need to be committed to a long-term, possibly a lifetime regimen of diet control and regular exercise. Indicates the types of therapeutic modalities available.

15. If patient agrees to embark on a weight reduction program, performer may decide to start with a record of the patient's food intake and energy expenditure. If so, performer may have patient given an appointment for instruction in recording food and exercise history or may decide to do personally then or at a later time. Performer decides on and records what time period is to be covered (several days or weeks), whether the record is to include exercise as well as food intake records. May record which aspects of record keeping are to be stressed. Arranges for instruction of patient if appropriate.⊛

16. Performer records results of consultation with patient as appropriate. Notes patient's attitude, what was decided. Arranges for next meeting with patient if appropriate or decides to proceed at once to treatment planning with patient.

⊛Creates a separate task.

APPENDIX 12

(CITED IN CHAP. 10, VOL. I)

THE CURRICULUM DEVELOPMENT PROCESS

(School of Health Professions, University of the Pacific, July, 1974)

In accordance with certain aspects of the curriculum development specified in the BHRD contract scope of work for three health care problems (i.e., specification of tasks and performance objectives, description of learning experiences, and evaluation procedures), the staff developed modular study guides for three high priority patient-care problems: obesity, hypertension, and diabetes mellitus.

A. Rationale For The Selection of Patient Problems

The rationale for selecting these three problems included the need to select relatively common problems that will be applicable to medical, dental, and health care coordinator students alike, and problems that will illustrate how a team of health care providers could organize and coordinate their responsibilities for providing comprehensive patient care. Furthermore, all three patient problems appeared to require considerable blending of basic sciences, clinical, and behavioral sciences.

B. Fundamental Questions Addressed in the Development Process

As prototypes for future modules, these trial study guides addressed three major educational questions:

- Is it possible to use task analysis information to develop self-instructional curriculum materials for a multi-professional group of health professional students?
- Is it feasible to incorporate different levels of competence for different students into one module?
- Is it feasible to organize and incorporate the sciences basic to patient care (basic, behavioral, and clinical) into a patient-problem module format?

Each of the above questions was addressed in developing the three modules. To the staff's knowledge, other health educators had addressed the same questions, but none seemed to have approached all three issues concurrently in a systematic plan for curriculum development. Most importantly, development of the three modules afforded direct, first-hand experience necessary to understand more fully the implications of self-directed, multi-professional instruction.

C. The Development Process: Description and Analysis

1. Obesity Module

a. Description: For the first module - Obesity - the staff utilized tasks developed by the Health Services Mobility Study and the Association of American Medical Clinics, as well as obesity tasks developed especially for SHP by the Health Services Mobility Study staff. Nearly two weeks were devoted to screening the tasks, for those primarily concerned with the diagnosis and management of obesity, that should be incorporated into the module. It became clear that although many tasks might be performed in the diagnosis and management of obesity, they would not be best learned in the obesity module. For example, testing the urine for sugar might be relevant for an obese patient but the test would be better learned in the diabetes module. The staff developed four criteria for selecting a task from the "pool" to be included in the module:

- the task is critical to patient outcome for this particular problem.
- it is administratively feasible to learn the task in this particular module.
- the task is specific to or uniquely important for this particular module.
- the task is more appropriate to a different high-priority problem.

Applying these criteria to each task in the pool, those tasks best suited for the obesity module were selected and assigned to a particular professional (e.g., physician, dentist, health care coordinator). For the problem of obesity, there were few, if any, directly relevant dental tasks. (This selection process will be repeated, for each module, until all appropriate tasks are included in the curriculum. If some are remaining, additional modules will be prepared. For example, it may be that many administrative tasks will be left over, suggesting a module on administrative procedures.)

Following the selection of tasks, the task statements and descriptions were transformed into performance objectives. The process yielded an empirically based set of performance objectives that could be organized into a patient problem-oriented module.

The next step in the process involved bringing together a group of content experts - both primary care practitioners and content specialists - for a two-day workshop. The aim of the workshop was twofold: (1) to review and validate the set of performance objectives, and (2) to draft an outline of the obesity module study guide.

The following outline emerged from the obesity workshop discussion of how best to organize and sequence the module:

- Prevention
- Recognition of the problem (by self and by health providers)
- Entry into the health care system
- Further diagnostic work and treatment plan
- Monitoring patient progress
- Assessment of outcomes (for the population of patients, with the given problem)
- Maintenance (both of the individual and the population of patients)

In addition, the workshop participants validated and revised the set of performance objectives that staff had derived from task analysis information. At the conclusion of the two-day session staff were then able to begin the initial draft of the obesity module.

b. Analysis: Several valuable insights were gained from the first obesity workshop, which led the staff to alter the development process for the subsequent diabetes mellitus and hypertension modules. Perhaps foremost was the observation that the process of screening tasks, then adapting task statements into performance objectives, could be shortened and simplified. The staff kept an account of the hours required to create the first module on obesity. At least 400 manhours, of which at least three quarters were spent by SHP staff, were required - an observation that compelled simplification of the process for the next two modules.

The second major observation concerned the use of consultants and content experts. For the obesity module, the workshop became a forum for revising and validating performance objectives. The early hope of having consultants help actually write the module was not attained

TIME SPENT IN DEVELOPMENT OF DIABETES AND HYPERTENSION STUDY GUIDES

	DIABETES		HYPERTENSION	
Category	Professional(hrs)	Research Assistant(hrs)	Professional (hrs)	Research Assistant(hrs)
Planning and Preparation	10.5	17.25	4.0	13.25
Writing, Selecting and Reviewing Tasks	9.0	11.5	4.5	12.5
Writing, Selecting and Reviewing Performance Objectives	15.0	11.0	13.0	8.0
Designing, Writing and Reviewing Study Guides				
First Draft	46.0	26.5	15.5	13.0
Second Draft	26.0	18.0	14.5	8.0
Third (Final) Draft	7.0	20.0	22.5	9.0
Workshops (7/18, 19 1974)				
Design and Planning	13.0	8.0	13.0	8.0
Workshop (3 planners, 8 consultants)	88.0	16.0	88.0	16.0
1 student	8.0		8.0	
Reviewing Workshop	3.0	2.0	3.0	2.0
TOTAL (professional)	217.5	130.25	178.0	89.75
(student)	8.0		8.0	
Clerical	59 hours		55.5 hours	

TABLE 1

COSTS INVOLVED IN DEVELOPING DIABETES AND HYPERTENSION STUDY GUIDES

	DIABETES		HYPERTENSION	
Personnel	Hours	Cost	Hours	Cost
Professional ($15.00 per hour)	217.5	$3,262.50	178.0	$2,670.00
Research Assistant ($5.20 per hour)	130.25	$677.30	89.75	$466.70
Student ($3.13 per hr)	8	$25.00	8	$25.00
TOTAL	355.75hrs.	$3,964.80	275.75	$3,161.70
Clerical ($3.50 per hour)	59.0	$206.50	55.75	$194.25
TOTAL	414.75	$4,171.30	331.50	$3,355.95

APPENDIX 13

(CITED IN CHAP. 1~~4~~3, VOL. I)

REPORT OF THE TASK FORCE
FOR THE
CONSIDERATION OF A SCHOOL OF HEALTH PROFESSIONS
AT PMC/UOP

AUGUST, 1974

Table of Contents

Page

1. Introduction 1
2. Summary of the Proposed School 5
3. Task Force Deliberations 9
    3.1 The Curricular Stages 9
    3.2 The Clinical Units 10
    3.3 Faculty 11
    3.4 Space and Financial Requirements 11
    3.5 Frequently Raised Questions (and Responses) 12
4. Task Force Recommendations 22

Appendices

Appendix I

A) Curricular Stages

B) Clinical Units

C) Faculty

Appendix II

Bibliography

Appendix III

List of Task Force Members
and Project Staff

1. INTRODUCTION

In December, 1971, representatives of the constituent bodies comprising the Pacific Medical Center (PMC) and the University of the Pacific (U of P) met to consider the possibility of creating a new type of school for the health professions on the site of PMC/U of P. The deliberations of this group culminated in a booklet outlining the major philosophical tenets and educational principles to be embodied in such a school. This booklet, in turn, served as the primary basis upon which a contract was entered into by the School of Medical Sciences of the U of P and the federal government (H.E.W.- Bureau of Health Resources Development).

In September, 1972, project staff arrived and began the work of the contract which called for a feasibility study for a new School of Health Professions (SHP). Plans for the proposed School ultimately reached a level of specificity that warranted serious initial consideration by the potential host institutions-namely, PMC and U of P. To assist these considerations, in December,1973, a Task Force was created composed of members representing the constituent bodies of PMC/U of P.

As members of this Task Force, we have met regularly for the past six months to further our understanding of the proposal that the project staff had prepared for the federal government in November, 1973. The proposal was complex and contained concepts and terms unfamiliar to many of us. After devoting considerable time and effort to comprehending the concepts underlying the proposed School, we have come away from our stewardship on the task force strongly supporting the School's objectives and its proposed means of achieving those objectives.

To us the most impressive goal of the proposed School is the kind of health professions student it hopes to produce. At the very least, its graduates would be the equal of graduates of any other high quality health professional school. Its graduates would, in addition, be especially skillful in preventing and/or resolving the major primary care health problems facing our citizens, be able to learn independently, and be highly skilled in communicating with patients and other health professionals. Graduates would have had considerable experience in working together with other health professionals, as members of a health care team dealing with humanistic and preventive aspects of care often neglected today. Thus, its major potential impact would be on the quality and not the

quantity of its graduates and eventually on the quality of our health care delivery system. We would urge the reader to keep in mind constantly the different kind of student (i.e., primary care practitioner) that this school proposes to produce and the innovative methods proposed to produce such graduates.

The second section of our report contains an elaboration of two critical points followed by a brief summary of the proposed School as presented to us by the project staff in December, 1973. Although a summary cannot answer all of the reader's questions, hopefully it can provide a "flavor" of the School and its major concepts.

The third section contains elaborations on the proposed School which were the result of our Task Force deliberations. This section ends with a series of questions frequently raised about the School and our responses to these questions.

The final section of this report contains our recommendations. These recommendations and the report in general will be discussed with our constituent groups and others. Therefore, the reader is urged to consider this report carefully so he can raise relevant questions or give suggestions whenever it is discussed. The reader should also note that the School's innovative character poses risks, many of which could be reduced if the proposed School were to undertake a series of initial pilot projects prior to its offical opening.

The first appendix contains elaborations in three areas, viz - A) Curricular Stages; B) Clinical Units, and C) Faculty. The reader should bear in mind that these elaborations reflect our thinking in areas that are constantly being updated and undergoing revision. It is presented, however, to give the reader a flavor of our deliberations.

The second appendix contains a series of articles to which the reader is referred for background material or research supportive of the major concepts of the proposed School.

The third appendix contains a list of the Task Force members and the project staff.

Three modular study guides have been prepared (Obesity, Diabetes, and Hypertension) and are available on request. They were prepared for use by medical, health care coordinator, and dental students, as per the government contract, but lend themselves readily to inclusion of social work and nurse practitioner students when the inclusion of these professions appears to be feasible.

Two points should be kept in mind as you read the remainder of the report. These points are raised here because they are crucial in preventing confusion or misunderstanding about the School.

POINT 1 - PRIMARY HEALTH CARE

Health care is often broken down into three categories: primary, secondary, and tertiary care.

Primary care refers to services that are necessary to prevent or resolve frequent, everyday health problems. It also implies services which enable people to maintain their health and which do not require elaborate techniques or resources.

The vast majority of primary care services concern ambulatory patients. Exceptions (e.g., emergency care, pneumonia, congestive heart failure, etc.) requiring services in an in-patient hospital setting are relatively few.

Secondary care refers to health services of a specialized nature, many of which require in-patient hospital settings. Secondary care problems are less frequent than those of primary care.

Tertiary care refers to those highly technical and sophisticated services that are available only in a hospital setting and usually only on a regional basis. Tertiary care problems occur least frequently.

Neurosurgeons, cardiac surgeons, and renal transplant teams are examples of tertiary care providers. General surgeons, subspecialists in internal medicine and pediatrics, ophthalmologists, psychiatrists, orthopedists, pedodontists, orthodontists, oral surgeons, periodontists, etc., are examples of secondary care providers.

Many of the aforementioned secondary care providers spend part of their work week rendering primary care. Our examples of primary care providers, therefore, include only those who spend the major portion of their work week in primary care activities. Such examples of primary care providers include nurse practitioners, general or family practice physicians, general dentists, general internists, general pediatricians, out-patient social workers, health care coordinators, etc. These examples represent the presumed bulk of the career choices of the School's graduates.

POINT 2 - GRADUATES OF THE SCHOOL OF HEALTH PROFESSIONS

Since the characteristics of the present dental (D.D.S.) graduate tend to be consistent with a career in primary care, we shall restrict our comments here to the medical (M.D.) and the health care coordinator (H.C.C.) graduates.

The Health Care Coordinator refers to a professional category not yet in existence. Such a person would focus most of his efforts on helping patients gain access to care and making certain they receive continuing care. This role would include those functions related to accessibility and continuity of care that are presently not performed systematically by one health professional. This role would also include functions presently carried out by secretaries, receptionists, medical and dental assistants and medical record librarians. H.C.C. students would be able to function effectively upon graduation in any ambulatory care setting.

As noted before, the SHP proposes to produce MD graduates who will be at least as proficient as, and yet more likely to pursue careers in primary care than, graduates of most present day medical schools. Without neglecting the major elements of a standard medical curriculum, the SHP proposes to emphasize heavily the skills required to be an effective primary care physician. It proposes that these skills be learned in effective primary care delivery environments. This implies that over and above the standard competencies, the M.D. graduate will be highly skilled in communicating and in self-learning. He will have had leadership training in team settings. He will have learned a great deal about group behavior, economics, sociology, psychology, etc., from his peers as well as from other sources. In short, if successful, the School will produce humanistic practitioners of primary care.

By virtue of the team experiences, frequent self-evaluations, self-pacing, and self-sequencing, the M.D. graduate will not only represent a new kind of product but will also have gone through a series of "new" kinds of processes. Thus, the SHP may be viewed as having two major interrelated purposes - namely, to produce highly skilled primary care practitioners by means of innovative educational methods.

The future legal requirements for M.D. graduates are not entirely clear at present. In a few states M.D. graduates can now practice without an internship year. By 1975 the free-standing (i.e., unassociated with any residency program) internship year will have vanished. The present plans of the National Board of Medical Examiners call for an evaluation at the end of medical school. If successful, the M.D. graduate will be able to practice medicine under supervision. After his residency training he would be eligible to take a specialty evaluation which, if passed, would allow the M.D. graduate to practice independently. The American Board of Family Practice now requires a three-year period of post-graduate training for Board eligibility.

Thus, for the reasons cited above, it appears quite likely that future M.D. graduates in general will be required to spend at least three years beyond graduation in postgraduate internship and residency programs. Trends also indicate that increasing numbers of M.D. graduates will take formal postgraduate training specifically in primary care (e.g., family practice, general internal medicine or general pediatrics). Whatever may be the future, the SHP proposes that upon graduation its M.D. students be prepared to carry out the basics of primary medical care independently, if personally desirable and allowed by licensing bodies.

The basics of primary health care do not include major surgery, appendectomies or tonsillectomies. It is during the postgraduate years that the M.D. graduates will learn advanced skills of primary care. If an M.D. graduate plans to practice in a very remote site with little or no contact with secondary care, he would probably learn to carry out some frequently required emergency procedures (e.g., appendectomy, setting of fractures, etc.) during these postgraduate years of training. Those M.D. graduates who desire careers in secondary or tertiary care will join graduates of other medical schools in seeking residency positions in their respective specialties.

The November, 1973 report to the federal government also includes nurse practitioner and social work students in the categories to be trained initially. Owing to the present scope of work of our contract, the curricular details pertaining to these two professions were not included in this report. Their inclusion in the School, however, as well as the possible inclusion of dental assistants and pharmacists, can be accomplished fairly expeditiously by utilizing the curricular principles that have been developed for the M.D., H.C.C., D.D.S. students.

2. SUMMARY OF THE PROPOSED SCHOOL OF HEALTH PROFESSIONS

There are problems in the delivery of health care despite many outstanding examples of its high quality. Likewise, multiple problems face both students and health educational institutions. The rationale underlying the proposed School is to address many of these problems so that we can educate health professional students effectively, using methods consistent with what is now known about education, thereby producing graduates more likely to answer some of our country's major health needs.

2.1 Key Features

2.11 Multiple Categories of Health Profession Students but one Faculty

This is an attempt to bring various categories of students together while they are learning their profession and before their attitudes about each other become fixed and unduly influenced by their mutual isolation. Categories of students are selected on their likelihood of working together in primary care after graduation. A single faculty was thought to be essential if the School was to provide the proper faculty models of health professionals working together as members of a team. Five categories of health professions students were selected for initial consideration: dentist, physician, nurse practitioner, social worker, and health care coordinator.

2.12 Initial Emphasis on Primary Care*

Clearly the major health care delivery problems of this country are associated in one way or another with quantitative, qualitative, and distributional deficits in primary care. Although many schools profess to produce primary care practitioners, their graduates still fail to enter primary care careers in sufficient quantity or in presently underserved areas. While the School cannot guarantee the career choices of its students, by emphasizing primary care in its curriculum, and by having primary care practitioners as faculty members, it can produce graduates better able to render primary care. At the same time, those graduates electing other than primary care careers will be fully prepared by the SHP curriculum to enter postgraduate speciality training programs.

Primary care is sometimes erroneously thought to be inconsistent with high quality care. Graduates of the School will be highly competent at meeting primary care needs - prevention and patient education as well as diagnosis and management. They will be at least as competent as graduates of existing professional schools. They will be able to care for the problems that most patients bring to the health care provider.

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*Defined as those services required to prevent or resolve frequent daily health problems not involving elaborate techniques or resources. It implies that consumers of this care are predominantly ambulatory.

2.13 Education As A Continuum

SHP will view the education of health professionals as a continuum, rather than as discrete and unrelated parts. This has several implications. It means that the School must recognize previously acquired competence without rigid academic course requirements. It means that anyone in a health care career should have the opportunity to move vertically or horizontally in his career based upon his ability. It means he should not be forced to repeat educational experiences unnecessarily. Finally, it also means that graduates of the School never really "leave" the School permanently. They will have acquired techniques that will continually help them examine their delivery of patient care systematically. They will then consult with the School to help them identify and reduce the deficits in their health care delivery performance. Continuing education programs will play an integral role in maintaining the continuum of education.

2.14 The Humanist vs. the Scientist as a Health Professional

The evidence is clearly impressive that serious attention must be devoted to preparing health professional students to deal with the human problems of health - indeed, to serve the health needs of human beings. We must acknowledge that much of what the provider does in his every-day work depends upon the effective application of psychological and social skills. All the scientific disciplines underlying the human encounter (the interview, clinical reasoning, judgment and decision-making, and the provider-consumer contract) are behavioral in nature. Thus, the proposed School addresses behavioral as well as biomedical sciences in an attempt to balance the student's effectiveness with patients. In effect, the School assumes that its graduates are both humanists and biological scientists.

2.15 Curriculum

Probably the most innovative aspect of the School is its curriculum. Rather than following the usual method of defining this or that course, the curricular planners have examined those health problems most frequently seen in primary care settings. They also have looked at the tasks required by the health professionals to prevent or resolve each major health problem. Thus, the major segment of the curriculum is comprised of the knowledge, skills, or attitudes required to prevent and/or resolve health problems.

The second part of the curriculum concerns those skills required to communicate effectively with patients and other health professionals.

The third curricular segment concerns a series of skills which, if learned, will help the student to become a continuous self-learner. In effect, the graduate of the School will be able to assess his own standards of performance, to compare his performance with his standards, and to plan educational programs to correct his performance deficits. Since we are concerned with health professionals, the auditing of the student's patient care will be the major format for self-learning skills.

Upon acceptance into the School, the student will go through a rather long orientation period (1 to 3 months for M.D. and D.D.S. students), during which his adviser will learn about the student's learning style, attitudes, career choices, personality, etc. Also, the student will have an opportunity to demonstrate his competence in any area required by the School in his professional category, and to become familiar with the new learning processes.

Finally, the curriculum is self-paced and self-sequenced to a great degree. Multiple safeguards are planned to prevent students from going too far astray or taking undue amounts of time. Multiple and frequent self-evaluations are offered as aids to student learning. Certifying evaluations will be given less frequently than is usual and then, for the purpose implied by their name.

2.16 Faculty Competence

Too often faculty are chosen only for their research or patient care ability. While no one questions the importance of these two areas, the proposed School attempts to give highest priority to competence as a teacher. This means that the School will be highly selective in its recruitment and will devote considerable efforts to provide training in the educational process for its faculty. However, it does not mean the School will neglect research. In fact, the School would actively encourage and support research, especially that relating to health care delivery and the educational process.

2.17 Financial Considerations

Two points deserve special emphasis. First, wherever possible, existing facilities will be used for the proposed School. Second, to the degree that it is possible, the School should eventually be capable of operation on student tuition plus governmental or other subsidies alone. If this is not possible, the School will require a stable source of funds to make up the difference between the above income and total School expenses.

2.2 Conclusion

This highly innovative School is being proposed for development on or near the site of PMC under the joint sponsorship of PMC and U of P. It will attempt to educate future primary health care providers in ways that are consonant with how people learn best. In comparison with traditional schools, its major impact will be in producing health professionals more capable of dealing with the human factors involved in health.

For those who still have unanswered questions after reading this report, we suggest contacting the project staff (Extension 2771 or 921-1055) for more detailed material, or consulting with a member of the Task Force.

3. TASK FORCE DELIBERATIONS

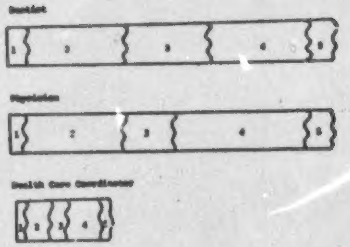
Although most of the work of the Task Force was carried out in two separate subgroups, dealing with educational and clinical aspects respectively, frequent joint sessions unified and integrated the findings, structure, and recommendations into a single report.

3.1 The Curricular Stages

In attempting to break down the curriculum into stages, we run the risk of destroying the important SHP concept of self-sequencing. However, some estimates of student numbers and flow are necessary if rational planning and operation are to occur. Therefore, the curricular stages which follow are only for the purpose of planning and are not to be conceived of as impediments to the principle of self-sequencing.

In general, we believe students will pass through five curricular stages. Figure 3 shows diagramatically the types and relative durations of these stages for three categories of health professions students. The verticle lines delineating each phase from its neighbor are purposely wavy to signify that there is a great deal of variability both in the duration and the composition of each phase.

Figure 3



Stage 1.: Orientation

Stage 2.: Acquisition of basic knowledge and skills:

- a. Basic biomedical sciences
- b. Basic behavioral sciences, including
  - 1) Learning skills and
  - 2) Communication skills

Stage 3.: Practice with intensive supervision

Stage 4.: Clinical Unit experience

Stage 5.: Special interest experience

3.2 The Clinical Units

The major clinical experiences for SHP students will occur in ambulatory care facilities (i.e., clinical units) organized by the School. These facilities are of three types - a Central Clinical Unit at or near PMC, an Urban Clinical Unit and a Rural Clinical Unit. One of each of these clinical units will be required at the opening of the School, and three additional ones may be formed during the subsequent five years.

As a Task Force we have discussed these clinical units at length. Their size, organization, location, etc. are all matters for continuing discussion and planning. The interested reader can acquire some notion of our initial thinking about these units in the first Appendix.

The only point that needs special emphasis here is that these units are crucial to the proper functioning of the School and should reflect both what is occurring now in outpatient care and some model units presaging the future of primary ambulatory health care.

3.3 Faculty

The School's major emphasis will require unique faculty members, each of whom will require training in the process of education prior to the School's opening. They must learn to function in a role that emphasizes the facilitation of student learning rather than in the traditional teacher role which does not emphasize this aspect.

The critical mass of faculty will be those in those primary health care professions for which the School will provide training initially. These faculty will be advisers for individual and small groups of students. These faculty will also spend varying amounts of their time practicing their health profession in one of the clinical units, where they will also be joined by others primary care clinical unit faculty. In addition there will be a category called resource faculty. These will consist of health professionals engaged in secondary or tertiary care, and biomedical scientists. The resource faculty will be employed on less-than-full-time basis to provide the students with the necessary background in the sciences basic to the effective practice of primary care.

More details of our concepts concerning faculty can be found in the first Appendix. Again the reader is cautioned that many of these thoughts have been undergoing revision since the time the first draft of the Task Force Report was produced.

3.4 Space and Financial Requirements

The project staff's November 1973 report to the federal government contains projected budgets and the financial and space requirements for the SHP.

An updated report of these considerations is being prepared.

3.41 Space Requirements

There is sufficient land and space within PMC for constructing the buildings that would satisfy the requirements of the proposed School. Since developmental and start-up programs will require more space than is immediately available, the School will require the use of temporary or remodeled facilities in the short run.

3.42 Financial Requirements

Whatever may be the financial realities of the SHP, it must not threaten the operating funds of either PMC or U of P. Fund development, preferable by both U of P and PMC, will be necessary if the SHP is to become a reality.

In assessing the required resources, we should like to call attention to the many benefits likely to accrue to PMC and to U of P if the SHP should be successful. These include increased resources, a strengthening of primary patient care, an increase in local, state, national, and international reputation, and increased patient referrals.

3.5 Frequently Raised Questions (and Responses)

We have asked those whom we represent to confront us with questions they have about the proposed School. In addition, we have raised questions ourselves as a result of our reading and discussing the November 1973 report. Finally, the project staff have raised additional questions. All of these questions have been grouped according to topic areas and are presented here.

Why should the proposed SHP be developed at PMC/U of P rather than at an existing medical school or another medical center?

The proposed SHP is extremely innovative and possibly even revolutionary in its concepts. To attempt to "graft" this School onto an existing medical school would be extremely difficult, if not impossible, at present.

It is true that some of the problems that would occur in an existing medical school would also occur at PMC/U of P. The magnitude of these problems at PMC/U of P, however, appears to be much less, and the problems are more readily soluble. Innovations in undergraduate health professions education could occur here without threatening present or contemplated postgraduate programs. Indeed they would complement and strengthen each other. For example, a largely self-instructional curriculum would not threaten present intern or residency programs, but would provide interns and residents with helpful learning materials. Existing PMC/U of P programs in nursing, medical, dental and continuing education would be complemented by an SHP curriculum which emphasizes communication and patient care audit skills.

Of equal significance is the climate for encouraging educational innovation which is present at PMC/ U of P. The U of P School of Dentistry is widely recognised for its 3-year curriculum and its community outreach program. The U of P is internationally known as the site of the first "cluster college" (Raymond College) and the first bilingual college (Elbert Covell College).

The PMC/ U of P complex offers excellent resources needed by a developing School of Health Professions. These include a research center (Institute of Medical Sciences), a dental school (U of P), a hospital (Presbyterian), an existing health sciences library, and interested potential resource faculty.

What will be the major impacts of the proposed School on PMC?

Faculty

The SHP will look to PMC as its first source for resource faculty recruitment. In light of PMC's emphasis on specialty in-patient care, it is unlikely that SHP will be able to recruit all of its primary care faculty from PMC. The impact on PMC will be greater with respect to SHP's resource faculty - viz., clinical specialists and basic scientists. Potential resource faculty exist in the speciality services of the Hospital, in the School of Dentistry, and at the Institute of Medical Sciences. (In later sections of this report, we recommend ways in which PMC's current educational programs will be protected, especially with respect to faculty.)

Hospital-based Patient-care Services

Laboratory, X-ray, and other patient-care services required by the Clinical Unit should be contracted for by the SHP. Patient fees will be designed to cover the costs of these services and the costs of any expansion of services required to accommodate the increased usage arising from the existence of the Clinical Unit. The self-pay concept, in combination with advance planning to anticipate increased demand for services, should allow for a continuous provision of services without added burden on equipment and on already taxed staff and without additional expense to PMC.

How will the proposed School affect the present practices of medicine and dentistry at PMC?

There is no reason to believe (as would be true in a medical center in which the medical school owned or ran the hospital) that the practices of those who wish to remain unaffiliated with the proposed School will be affected materially. Those who wish to become faculty members of the School will, of course, have to demonstrate competence as teachers. They, in turn, will be reimbursed for their teaching. In either case, physicians and dentists will retain the right to decide whether or not their patients will come in contact with SHP undergraduates, just as they decide the same for interns and residents. Finally, it should be remembered that most of the patients for the proposed School will be ambulatory, not hospitalized.

It is our judgment that the proposed SHP will have a salutory overall effect on patient care at PMC. It should lead to increased referrals to PMC for secondary and tertiary care as the school's influence spreads throughout Northern California, and its focus on health care delivery should maintain the quality and widen the scope of care rendered at PMC.

All of this is not to deny that health care delivery at PMC, and elsewhere, will undergo considerable changes in the future. The bulk of these changes, however, will occur because of changes in our society and not because of the presence of the SHP.

What will be the admissions criteria? Is the level of maturity and motivation in students sufficient to expect such a self-paced curriculum to be successful?

Present-day methods of selecting students for admission leave much to be desired. Although there is ample evidence correlating factors on admission with success in medical school, there is no evidence indicating any significant correlation between these factors and professional competence after graduation. Therefore, whatever criteria are adopted, the school will embark on a long-term study of the relationship (negative and positive) between applicant admission characteristics and ultimate professional competence. It is highly probable that such factors likely to be identified will be non-cognitive ones such as personality, attitudes, etc. Therefore, considerable attention will be given to discriminating among, and identifying multiple non-cognitive characteristics on admission. Two factors have impeded such studies up to now. One is the absence of professional performance criteria and the other is the lack of long term follow-up data.

The data from both the University of Illinois at Champaign - Urbana and the Ohio State University clearly indicates that students do possess sufficient maturity and motivation to complete a self-paced curriculum expeditiously. The selection and admission process should "select out" those students who would have major difficulty in the kind of milieu planned for SHP. Furthermore, the orientation period should provide another opportunity to discover students unable to function in such an environment.

The November 1973 report refers to an arrangement whereby each student would determine his sequence and ask his adviser to arrange his learning experience to meet his sequence insofar as possible. The adviser would arrange for the availability of resource (including basic sciences) faculty and some of the evaluations and post-tests. It should also be recalled that this adviser function refers only to sequence and not to content. This is to say that the student will rely on the adviser to arrange experiences for him as determined by the sequence the student has chosen. This adviser function has nothing to do with specifying content; prescribed competencies will be the same for all students within a given category of health profession. The series of pilot studies that will be carried out before the School opens will (1) determine the efficiency of this sequencing arrangement and (2) determine what minimal curricular sequencing might be necessary by the School.

Does the curriculum have enough depth? Is it too mechanistic?

In large measure the answer to these questions depends on ones definition of "enough ." The question is usually asked in reference to basic sciences. If one looks at the modular study guides (available on request) it will be noted that the medical student will learn a great deal about metabolism, digestion, physiology, etc. In so doing he will have acquired factual

and conceptual basic science information as it applies to the care of patients. While he may not be able to write out all the steps in metabolism of foodstuffs, he will understand the major interrelationships among fats, proteins, and carbohydrates, the meaning of hunger, appetite and satiety, the manner in which fat is deposited, removed and transported, etc.

Further depth can be pursued when the graduate selects a definitive career plan. If he enters practice immediately he should be able to function well at a basic level of primary care. If he pursues post-graduate (intern and residency) training, he can develop his knowledge and skills in more depth as befits his career choice (e.g., primary care - general pediatrics, general internal medicine, family practice, general dentistry; or secondary care - general surgery, prosthodontics, medical or pediatric sub-specialties, etc.).

The possibility of a curricular approach that is too mechanistic is a concern that appears to emanate from three areas - viz., tasks, algorithms and basic sciences.

Tasks are usually viewed as the purview of training rather than education. This is true in a narrow sense. However, the proposed SHP is utilizing tasks as building blocks for the curriculum and not as the whole curriculum. Students will be required to demonstrate competence beyond that of tasks - namely, in integrating their task accomplishments in order to prevent or resolve a patient's problems. The acquistion of this kind of competence is beyond that of training and clearly within the context of education.

Algorithms (i.e., a series of rational steps in problem-solving) will be used in two ways. The first use is by physician and dental assistants or extenders. If utilized properly, they can assure good quality of care by professional delegation of duties. The physician and dentist will be asked to create and critique algorithms but not necessarily to use them themselves. By using algorithms in such a fashion, the student should gain additional insights into the planning, management, and comprehensiveness of care, as well as help in focusing on outcomes of patient care.

The absence of basic science courses per se concerns many people. The curriculum is designed, however, not to overlook the basic sciences, but rather to put the basic science material where it will have the most relevance to patient care, thereby better insuring its retention and transferability. In order to satisfy the curricular requirements of the SHP, students will learn the basic sciences, not as discrete disciplines, but rather as concepts and facts which are indispensable in dealing with patient problems. Finally, the students will be learning the important humanistic aspects of health care, often in small groups. Thus, the curriculum is, in fact, less mechanistic than a traditional one, since it is more naturally fitted to the way students will need to approach patient problems for the rest of their professional lives, and since much of it will bring students in close association with other students from the same and from other professional categories.

How much in-patient experience will be needed?

The major focus of the School is on primary (ambulatory) care. That inpatient care which will be required will focus on two areas: special emphasis on primary care problems requiring hospitalization (including pneumonia, congestive heart failure, pre and postoperative care, etc.), and those problems required for a well rounded medical education at least equivalent to that presently provided by existing medical schools. The resource faculty may wish to utilize their hospitalized patients to demonstrate some abnormal physical findings or unusual laboratory tests and results. Some of a medical student's curricular experiences will occur in an in-patient setting utilizing hospitalized patients.

Indirectly, this question may reflect a concern with the impact of the School on the Hospital, its medical staff, and its post-graduate programs. It is suggested that no one from the PMC staff can become a member of the SHP resource faculty without agreement by the chief of the Hospital department to which that individual belongs. This will help assure that the postgraduate teaching requirements of every PMC department are protected.

Evaluations - Will clinical judgment be evaluated? How frequent will evaluations occur?

Clearly, clinical judgment will be evaluated. In fact, one of the express purposes of the School is to specify more explicitly what is meant by clinical judgment. There is evidence that the better clinical judgment is specified, the better the student can learn it. Certainly, the better clinical judgment can be specified, the better it can be measured, evaluated, and reinforced.

Several schools have been able to identify critical characteristics of successful health practitioners. One of these characteristics is clinical judgment. This finding led to the development of several newer modes of evaluation (Patient Management Problems, Case Study Problems, Diagnostic Management Problems, Computer Aided Simulation of the Clinical Encounter, etc.), each of which measures some aspects of problem-solving ability and clinical judgment. (Examples of these evaluation modes are available on request.) While we cannot at present measure clinical judgment in its entirity, we can measure aspects of it, and do so in ways that are reliable and valid.

Most schools place major emphasis on end-of-course evaluation. Often this turns out to be too little too late because the student does not get much of a opportunity for corrective action without paying a very steep price - namely, repeating a course. Like other schools, the SHP will provide certifying evaluations to assure that each student demonstrates at least prescribed levels of required competence. In addition, however, each module or learning unit will contain frequent opportunities for the student to monitor his own progress. Thus, the student (and hopefully his adviser) will be in almost constant touch with his progress. In addition, the graphic charting of his own progress will provide the student with tangible evidence of satisfactory achievement of goals. Used in this fashion, these frequent evaluations are important tools of learning, and are not punitive. They enable corrective actions to be undertaken without undue loss of time and unproductive activity.

A large number of evaluations will require human observation and interpretation. This will be especially true with respect to the communication, interpersonal and complex problem-solving skills.

Even those that are computerised will require human thought and pre-evaluation.

How much emphasis will be given to interpersonal skills?

One entire segment of the curriculum is devoted to interpersonal skills under the label of "Communication Skills". Often, the lack of these skills detracts from the clinical competence of third and fourth year medical students. Similar observations have been made concerning students in other kinds of health professions education programs. Although such observations are noted, little is done to bring about their remediation; hence such students usually are granted degrees reluctantly. In the proposed SHP curriculum, interpersonal skill deficiencies should be discovered early, owing to their inclusion in all the instructional study guides and in the Communication Skills segment of the curriculum. Remediation (or dismissal if remediation is impossible) can be accomplished before the student or the School has invested an undue amount of relatively unprofitable time and effort.

Communications Skills refer to two contexts - viz., communicating with patients and with other health professionals. Patients have problems about which they may or may not be aware. Health professionals who are competent in communication skills such as listening, reassuring and confronting, can help patients to recognise and verbalise their problems. Other communication skills relate to verifying what the patient is communicating to a health professional before the professional acts on that information. Finally, the health professional must convey information to patients and be sure that the patient understands his message.

With respect to interaction among various health professionals, we would stress those skills that will facilitate the expeditious sharing of information relevant to patient problems. These include skills in clarifying, supporting, record keeping, articulating clearly, etc.

It should be stressed that we are speaking about changing peoples' behavior and not their personalities. In contrast to their lower priority at most other schools, communication skills at the SHP will be highlighted by being learned systematically and will be integrated with the clinical skills needed to resolve or manage health problems.

For example:

a) The ability to listen: This skill can be measured and taught by the use of simulated patients. The "patient" would be thoroughly coached as to the nature of his problem(s) and the pertinent data the student should be able to obtain from him. The student - "patient" interview would show those details that the student did and did not pick up from the patient. In large measure the student's success will depend on his ability to listen.

b) The ability to discriminate between a patient's stated and expressed affect: Suppose a "patient" states verbally that he is not worried about his major complaint and yet shows multiple signs of anxiety such as sweating, jitterness, wringing of hands, frowning, etc. Such incongruities can be "programmed" into simulated patients. Students can be taught to recognise them, and their success in doing so can be measured and evaluated.

The modular study guides contain some examples of communication skills.

How will a student in trouble be identified? How much remedial education will be required?

During the orientation period the student's adviser will learn a great deal about the student's learning style, career goals and motivation. If their relationship is preserved over time, the adviser and the student will develop mutual trust, such that the adviser should be able to recognise when his student is in trouble. Likewise, the student should be more apt to seek the adviser's help when in trouble. This system is based on the assumption that early identification of problems is more likely to lead to satisfactory solutions than is late identification since early problems will naturally tend to be less complex and more amenable to correction.

Prior to the opening of the School, each major piece of instructional material will be pilot-tested to determine the range of reasonable time required to master the material. Thus, each student will be aware of these ranges before embarking on an instructional package and will receive periodic feedback of his progress through each study guide.

Evidence of a student's repeated failure to keep within expected time periods will necessitate a meeting with his adviser. If significant improvement does not follow this meeting, the student will then meet with a designated group of faculty and students. This group will review with the student his progress and suggest remedial assistance, which may mean a less rigorous curricular pathway. As a last resort, the group may have to decide if a student should continue, and if so, under what circumstances.

If the system works as planned, the student's strengths and weaknesses will be identified, and this information will be fed back to the student on a frequent and systematic basis. Students will be expected to play an active role in this process. Thus, students in trouble should be identified early, their problems identified, and remedies suggested. Theoretically, no student would ever get to the point of requiring major remediation. Whatever remediation is required can probably be accomplished at lower cost in the SHP than in standard schools owing to the extensive use of self-instructional materials.

What level of competence will be required? Is there a minimal curriculum?

The curriculum will state clear-cut requirements for each category of health professional student. Thus, for example, every dental student would have to demonstrate predetermined levels of competence in order to graduate. These levels would be identical for all dental graduates. However, each dental student would differ from all others in that he would progress at a self-selected pace (within limits) and pursue certain areas in depth much beyond the levels of required competence. Thus, variability will occur in pace, in sequence, and in expertise beyond minimal competence, but there will be no variability in the required levels of competence.

The phrase "minimal curriculum" is a misnomer that grew out of an apparent misconception concerning self-pacing and self-sequencing. The educational plan should not be interpreted as conferring complete freedom upon the student to chose what he wants to learn. Actually, the student makes his sequencing selections from the required curriculum. In other words, there are a series of competencies required of every student in a particular health professional category. From these, each student will have considerable latitude in choosing his sequence. Once he chooses a unit to learn he will be shown the "reasonable time range to complete the unit." Thus, even though he can self-pace himself, there are limits to this freedom. In effect, then, the "minimal curriculum" of the SHP is the regular required curriculum for all students. Students may elect to take advanced work in areas of special interest and indeed will be encouraged to do so, but will still be held responsible for demonstrating the prescribed required competencies.

How will you ever find the faculty required by such an innovative school?

No doubt this will be difficult, but several factors indicate it will be possible. First, only faculty who wish to join the SHP will be considered. This implies that they would agree with the major precepts underlying the proposed school as they understand them. Second, the project staff have worked at several leading health professions schools, and each can identify several faculty members who would both likely match the SHP faculty requirements and be anxious to join the School. Third, the plans call for a period of at least one year to elapse between the hiring of the initial major faculty and the start of the School. During this time the faculty would undergo intensive training in the process of education. Fourth, faculty training would be a high priority program in the SHP, and it would be available to all faculty on a continuing basis.

4. TASK FORCE RECOMMENDATIONS

We have spent six months studying a series of complex and innovative concepts underlying the proposed School. We firmly believe in the philosophic basis and intrinsic merit of these concepts. Consequently, we strongly recommend that our constituencies support the immediate development of the proposed School.

To better assure its success, we make five recommendations regarding the philosophy of the School and suggest that our other recommendations serve as guideposts in the development of the School.

Philosophy

4.1 The goals of the School should stress the improved training of health professionals to provide more and better primary care.

4.2 Although there is no guarantee that SHP graduates will serve in presently underserved areas, the intent of the School is to increase this likelihood.

4.3 The curriculum should consistently emphasize team delivery of care.

4.4 Admission criteria should reflect:

- a. preference for students interested in primary care(although the School cannot guarantee that admitted students will remain in primary care).
- b. preference for students with prior involvement in health care.
- c. preference for students who have demonstrated capability in independent learning.
- d. preference for students who can demonstrate basic communication skills.
- e. consumer input, but not control. (The effects of consumer roles in the admissions process should be studied.)

4.5 Those definitions in Points 1 and 2 of the Introduction (Section 1) to this report should be accepted in the future planning of the School.

Developmental Guideposts

4.6 During the next six months, the entire plans for the SHP should be reviewed by a group of people who have had experience in developing new schools of health professions (e.g., Deans, Vice-Presidents for Health Affairs, University Presidents, etc.). To some degree this process has already been occurring, and plans have been made to carry out fully this recommendation.

4.7 There should be a period prior to the official opening of the School during which the major untried aspects of the plan can be subjected to pilot projects in order to work out expected and unexpected organizational difficulties.

4.8 The proposed School should not jeopardize the operating budgets of PMC or U of P.

4.9 The curriculum must satisfy licensure and accreditation requirements.

4.10 Assessment of students must include those made by faculty observations.

4.11 The orientation period should provide both the student and the School with a clear understanding of their mutual expectations.

4.12 Career counseling should be maximal during orientation period to prevent students from pursuing "unreal" goals.

4.13 Given the emphasis on individualized instruction and multiple training sites, factors affecting a cohesive social environment for the School require further investigation.

4.14 Resource faculty from PMC staff should be appointed only with written agreement from their respective chiefs of service.

4.15 The School should avoid providing subsidies (e.g., overhead, office space, etc.) to part-time faculty.

4.16 The proposed Clinical Unit to be located at or near PMC should not jeopardize the present provision of laboratory and X-ray services to PMC patients.

Appendices*

to the

REPORT OF THE TASK FORCE
FOR THE
CONSIDERATION OF A SCHOOL OF HEALTH PROFESSIONS
AT PMC/UOP
(August, 1974)

* Appendix I : Curricular Stages; The Clinical Units
Appendix II : References
Appendix III: Task Force and Staff for Consideration of a School of Health Professions

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APPENDIX I.

A. CURRICULAR STAGES

STAGE 1 - ORIENTATION

- Average Duration - D.D.S. and M.D. - 9 weeks (6 to 12 weeks)
  and (Range) M.C.C. - 2 weeks (1 to 3 weeks)
- Key Features
  - assessment of background, skills, knowledge and learning style
  - assessment of career choice
  - initial explorations of health care delivery systems
  - initial experiences in communication skills and scientific languages
  - a bilateral decision (student and SHP) whether or not to continue.

STAGE 2 - ACQUISITION OF KNOWLEDGE AND SKILLS IN SCIENCES BASIC TO HEALTH

- Average Duration - D.D.S. and M.D. - 12 months (9 to 14 months)
  and (Range) M.C.C. - 3 months (2 to 4 months)
- Key Features (For D.D.S., and M.D. - the equivalent of passing of Part I-National Boards.)

Biomedical

- much is self-instructional with faculty (resource and adviser) back-up.
- much material already available:
  - D.D.S. - University of Florida, University of the Pacific.
  - M.D. - University of Illinois (Champaign) and Ohio State University.
- first contact with laboratory tests.

Behavioral

- early experiences in self-evaluation and patient care audit
- basics of library science
- team experiences (mainly simulated) in communication (including history-taking) skills
- beginning exploration of group processes (shifting leadership, conflict identification and resolution, dependence and independence)

Physical Exam

- some experience with self-instructional units and simulation (Example - Ophthalmology -"SIMO")
- close supervision by resource faculty

STAGE 3 - PRACTICE WITH INTENSIVE SUPERVISION

- Certification for Advancement to Stage 3: At the completion of Stage 2, the SMP student will be required to demonstrate competence in both basic science and clinical skills. For the Health Care Coordinator student, this will include vocabulary, knowledge and initial (simulated) experience with appointment and record systems and the screening of patients for complaints for routine, emergency and urgent visits, etc. For the Dental student, the criteria will include the capacity to begin working with patients under close supervision in a dental clinic setting. Medical students will be required to demonstrate a capacity to begin a closely supervised hospital-based clerkship. This implies knowledge to the level of National Boards Part I and capacity to carry out a general physical exam and history and to formulate a statement of patient's problems as they are understood.
- Average Duration - D.D.S. - 10 months (8 to 12 months)
  and (Range) M.D. - 6 months (4 to 8 months)
  H.C.C. - 2 months (1 to 3 months)
- Key Features

  M.D.
  - close supervision by interns, residents and medical staff
  - emphasis on problem formulating and solving skills
  - relatively little responsibility for direct patient care
  - predominantly involving hospitalized patients

  D.D.S.
  - heavy emphasis on communication skills in patient care
  - continued work in sciences basic to health
  - assigned first patients under close faculty supervision
  - spend time in each specialty department
  - predominantly in general dental school clinic (U of P)

  H.C.C.
  - heavy emphasis on skills of communication, patient screening, appointment and record-keeping systems, and telephone techniques

STAGE 4 - CLINICAL UNIT EXPERIENCE (see 3.2 for description of Clinical Units)

- Average Duration - D.D.S. - 14 months (12 to 18 months)
  and (Range) M.D. - 14 months (12 to 18 months)
  H.C.C. - 4 months (3 to 5 months)
- Key Features
  - students go first to Central (PMC) Clinical Unit, then to Urban Clinical Unit, and finally to Rural Clinial Unit
  - gradually increasing responsiblity for patient care.
  - each student is a member of an interdisciplinary health delivery team comprised of students and faculty.

STAGE 5 - SPECIAL INTEREST EXPERIENCE

- Average Duration - D.D.S. - variable
  and (Range) M.D. - 3 months (2 to 6 months)
  H.C.C. - probably not applicable
- Key Features
  - in-depth experience in area (e.g., clinical, research, basic science, humanities, etc.) elected by student after discussion with adviser
  - may also include remediation experiences to correct student's deficits
  - may be used as start of postgraduate training even though considered part of curriculum to meet legal time requirements
  - last stage before graduation.

B. THE CLINICAL UNIT

The Central Clinical Unit

- Major Characteristics
  - at or near PMC
  - highest faculty/student ratios
  - large number of secondary and tertiary care providers immediately available.
  - site of SMP student's first clinical unit experience
  - large but variable amounts of time loosely scheduled to accommodate Stage 2 students
  - site of most of student's remedial experiences
  - intimately involved with primary care interns and residents who will provide and supervise care as well as teach
  - intimately involved with emergency care services

- Student Utilization

M.D.

Stage 1 - for observation and demonstration
Stage 2 - for observation, practicing initial skills
Stage 3 - not utilized
Stage 4 - first clinical unit experience
  - progressively increasing responsibility for patient care
  - close faculty supervision, especially at first
  - multiple opportunities to interact with specialists
Stage 5 - only for special interest elective

D.D.S.

Stage 1 - for observation
Stage 2 - for minor amounts of observation and patient contact (most of this stage is spent in laboratory)
Stage 3 - not utilized (present UOP dental clinics utilized)
Stage 4 - same as for MD above
Stage 5 - only for special interest elective

H.C.C.

Stage 1 - observation
Stage 2 - observation, practice of basic skills, modeling of faculty
Stage 3 - for principal application of learned skills
Stage 4 - for assuming increasing responsibility
Stage 5 - only for special interest elective

The Urban Clinical Unit

- Major Characteristics
  - within 30 minutes traveling time from PMC
  - located in low-income area
  - located in area presently underserved in primary health care
  - outreach mechanisms emphasized
  - close liaison with Central (PMC) Clinical Unit
  - exchange of patients and specialists with Central (PMC) Clinical Unit

- Student Utilization

M.D.

Stage 1 - for observation
Stage 2 - primarily for observation
Stage 3 - unlikely
Stage 4 - after Central Clinical Unit experience
  - when able to assume major responsibility for patient care
Stage 5 - for special interest elective

D.D.S.

Stage 1 - }
Stage 2 - } uncommonly, and then primarily for observation
Stage 3 - }
Stage 4 - }
Stage 5 - } same as M.D. student, above

H.C.C.

Stage 1 - }
Stage 2 - } unlikely except for observation or sporadic practice of skills
Stage 3 - }
Stage 4 - }
Stage 5 - } same as M.D. student, above

The Rural Clinical Unit

- Major Characteristics
  - emphasis on mechanisms for solving problems of distance between patients and providers
  - patients requiring tertiary care referred to PMC
  - manned solely by primary care providers
  - located in rural area presently underserved in primary health care

- Student Utilization

M.D.

Stage 1 - occasionally for observation
Stage 2 - not utilized
Stage 3 - not utilized
Stage 4 - latter part of this stage only
Stage 5 - for special interest elective

D.D.S.

- same as for M.D. students

N.C.C.

- predominantly for Stage 4 students
- occasionally for Stage 5 students.

Staffing Patterns

A staffing rationale, developed for the Central (PMC) Clinical Unit, was based upon a number of assumptions which follow:

Assumptions:

- The Central Clinical Unit should be operated 11 hours/day, 5 days/week, 48 (equivalent) weeks/year, for scheduled, non-emergency care. (Example: 8 a.m. to noon; 2 p.m. to 6 p.m.; 7 p.m. to 10 p.m., Monday through Friday). Emergency care will be available 24 hours/day, 7 days/week, 52 weeks/year.
- Once the SMP is in full operation (i.e., admitting approximately 60 medical students each year), there will be approximately 60 medical students in Stage 4 of their curriculum at any given time. One-half of these (i.e., 30 individual students) will be assigned to the Central Clinical Unit while the remaining 30 (the more advanced) will be divided between the Urban and the Rural Clinical Units. Thus, the Central

Each of these students will be assigned either to Group A or Group B. Group A is the interdisciplinary faculty/student group that is responsible for staffing the clinical unit from 8 a.m. to 6 p.m. weekdays; Group B is the comparable group responsible for all remaining hours (i.e., weekday evenings, weekends, and nights), providing emergency care coverage at all times and scheduled care during the weekday hours of 7 p.m. to 10 p.m. Therefore, the number of Stage 4-medical students in Group B on duty will vary depending upon the hour and day.

- Two kinds of faculty will be present in the Unit. The first is called Teaching Faculty (Tf). These are full-time primary care providers whose major role in the unit is teaching (average of 75% teaching, 25% patient care). The second major type of faculty are Practitioner Faculty (Pf). These are usually full-time primary care practitioners with a minor teaching role or part-time secondary care practitioners.
- The following patterns and schedule may be used:

HEALTH PROFESSIONAL	GROUP A (weekdays 8 AM - 6 PM)			GROUP B (evenings, nights, weekends)		
	M.D.*	D.D.S.*	N.C.C.*	M.D.*	D.D.S.*	N.C.C.*
Teaching Faculty (Tf)	3 (3.5)	1 (1.5)		1 (1.5)	0	
Practitioner Faculty (Pf)	3 (4)	3 (4)		3 (4)	2	
Stage 4 Students (S)	10 (15)	6 (10)		5 (15)	2	
Stage 2 Students (s)	15	15		5	0	

Table 3-1 - Clinical Unit Staffing Patterns

* Numbers within parentheses represent total assigned to group. Numbers without parentheses represent average actually on duty at any given time. Faculty numbers represent full-time equivalents (F.T.E.'s).

- The following represents a conservative estimate of the number of patients that can be seen:

HEALTH PROFESSIONAL	No. of PATIENTS SEEN/HOUR
Teaching Faculty (Tf)	0
Practitioner Faculty (Pf)	3
Student with major patient care responsibility (Stage 4) (S)	three-fourths
Student without major patient care responsibility (Stage 2) (s)	0

Figure 3-2 - Capacity for Patient Visits.

CALCULATIONS

A) (3Pf x 3pts/hr/Pf) PLUS (10S x 3/4pts/hr/S) x 11hrs/day = 180 patients/day

B) 180 pts/day x 5 days/wk x 48 equivalent wks/year = 43,200 patient visits/year

C) At 4 visits/patient/year [1]
43,200 patient visits/year   4 visits/patient/year - 10,800 individual patient population required

D) At 6 visits/patient/year [2]
43,200 patient visits/year   6 visits/patient/year = 7,200 individual patient population required

E) Using a more conservative figure of 150 patient visits/day:
150 patient visits/day x 5 days/wk x 48 equivalent wks/year = 36,000 patient visits/year
At 4 visits/patient/year = 9,000 individual patients required
At 6 visits/patient/year = 6,000 individual patients required

CONCLUSION - Given the student needs and the staffing patterns noted above, the Central Clinical Unit will require between 6,000 and 10,800 patients in its population. No allowances in the calculation were made for the presence of nurse practitioners, nurse practitioner students, or medical and dental interns or residents. Their presence would increase the required number of patient population.

C. FACULTY

In discussing faculty it is important to remind ourselves of the school's emphasis on primary care. Rather than the typical distribution of large numbers of secondary and tertiary care providers in the major faculty positions, the SHP faculty will be composed mainly of primary care providers.

Faculty Categories (N.B. - By virtue of his appointment, a faculty member could fit more than one of the following categories)

Advisers
- primary care providers
- full-time
- work closest with students during Stages 1, 2 and 3
- major role in helping student arrange his curricular sequence
- may also be Teacher or Practioner Faculty (Vide Infra)
- have admitting priveleges at Presbyterian Hospital (MD or DDS)

Resource Faculty
- secondary or tertiary care providers
- basic scientists
- may work in clinical unit
- recompensed for all teaching of SHP undergrads
- have admitting priveleges at Presbyterian Hospital (MD and DDS)

Clinical Unit Faculty

The full-time faculty, in the clinical unit, will be either Teaching Faculty (Tf) or Practitioner Faculty (Pf). These are primary care health professionals.

Teaching Faculty (Tf) - (Full-time)
- approximately 25% in patient care and 75% in teaching and/or research
- may be adviser
- must spend some time providing primary care to clinical unit patients
- full time faculty paid by SHP
- solely primary care providers
- have admitting priveleges at Presbyterian Hospital (MD and DDS)

Practitioner Faculty (Pf)
- full-timers mainly primary care providers (average of 75% patient care and 25% teaching and research)
- part-timers mainly secondary care providers
- full-time faculty paid entirely by SHP
- part-time faculty paid by SHP only for time in clinical unit.
- have admitting priveleges at Presbyterian Hospital (MD and DDS)

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[1] Experience of 8 Northern California Kaiser Permanent Facilities comprising 1,162,000 members during 1972 and 1973 for scheduled, non-emergency visits.

[2] Additional visits/patient/year included to allow for teaching emphasis of Central (PMC) Clinical Unit.

In addition, the Central (PMC) Clinical Unit would have the following secondary and tertiary care providers available on call immediately:

Physicians

- general surgeon, gastroenterologist, psychiatrist, pediatrician, obstetrician-gynecologist, dermatologist, orthopedist, radiologist, cardiologist and neurosurgeon.

Dentist

- none (patients will be referred to U of P Dental Clinic)

The following would be available for consultations or via special clinics:

Physicians

- hematologist, pulmonary disease specialist, neurologist, ophthalmologist, pediatric subspecialists, cardiovascular surgeon, specialty radiologist, plus all those noted above as being on call immediately.

Dentist

- prosthodontist, endodontist, oral surgeon, periodontist and oral pathologist.

Some Urban Clinical Unit patients may be brought to PMC for some secondary and all tertiary care problems, and some PMC providers will be brought to the Urban Clinical Unit for some secondary care needs. At the Rural Clinical Unit, the secondary care may be delivered by health professionals other than those at PMC.

Miscellaneous Faculty Items

- emphasis will be on contracts based on teaching competence
- recruitment will begin at PMC and spread outward as needs exist
- faculty from PMC must gain approval from their service chiefs to assure that existing educational programs not be jeopardized.
- if on Presbyterian staff - continue to provide post-graduate and continuing education
- For 3 to 6 years the existing structure, activities and clinics of the University of Pacific Dental School would remain unchanged. A small number of University of Pacific Dental School entering freshman (10 to 20) would be designated as SMP students and spend their entire time in the SMP curriculum even though utilizing some of the University of Pacific Dental facilities. Some present U of P Dental Faculty could become SMP faculty, either on loan or permanently.

APPENDIX II: REFERENCES

Health Care Team

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TASK FORCE AND STAFF FOR CONSIDERATION OF A SCHOOL OF HEALTH PROFESSIONS

UOP SCHOOL OF DENTISTRY

1. LeRoy Cagnone, D.D.S., Assistant Dean for Academics
2. Robert Middleton, D.D.S., Chairman, Department of Oral Surgery
3. Howard Myers, D.D.S., Ph.D., Chairman, Department of Biochemistry
4. James Pride, D.D.S., Assistant Dean for Clinical and Extramural Affairs

UOP CENTRAL CAMPUS - University of the Pacific - Stockton

1. Alistair McCrone, Ph.D., Academic Vice President
2. Ivan Rowland, Ph.D., Dean, School of Pharmacy

PRESBYTERIAN HOSPITAL, Pacific Medical Center

1. Martin Brotman, M.D., Vice Chief of Staff
2. Roger Burgess, Associate Administrator, Registered Pharmacist
3. *John Gamble, M.D. Chief of Medicine
4. Carlton Mathewson, Jr.,M.D., Chief of Surgery
5. John Niebauer, M.D., Chief of Staff
6. Marianna Pieck, R.N., Discharge Coordinator
7. Lois Scully, M.D., Executive Committee

INSTITUTE OF MEDICAL SCIENCES

1. George E. Williams, M.D., Chairman, Science Council

OTHER PROFESSIONALS

1. Allison Leak, R.N., M.S., Director, Nursing Education Program, California Nurses Association
2. Betty Gillespie Pollack, Executive Secretary, National Association of Social Workers, Inc.
3. Eva Maas, Alternative representative for National Association of Social Workers, Inc., Psychiatric Social Worker, Kaiser Permanente Medical Center
4. Alva Wheatley, Coordinator, Patient Services and Registration, Kaiser Permanente Medical Center

PROJECT STAFF

1. Gary M. Arsham, M.D., Ph.D.
2. Daniel S. Fleisher, M.D., M. Ed.
3. Bruce L. Hulbert, Ph. D.
4. Barbara Proctor
5. Dena Strum Klein
6. Bruce E. Spivey, M.D., M.Ed.
7. Mary Weiner

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*Chairman, Task Force

APPENDIX III

APPENDIX 14

(CITED IN CHAP. 14, VOL. I)

FINAL PORTION OF FEASIBILITY STUDY FOR A SCHOOL OF HEALTH PROFESSIONS AT PACIFIC MEDICAL CENTER / UNIVERSITY OF THE PACIFIC

(DOCUMENT ESTABLISHING THE TASK FORCE)

DECEMBER, 1973

SCHOOL OF MEDICAL SCIENCES
PACIFIC MEDICAL CENTER, Clay and Webster Streets
P. O. Box 7999, San Francisco, CA 94120 • (415) 921-1055

In July, 1972, a contract was awarded to the University of the Pacific at Pacific Medical Center for a feasibility study regarding a School of Health Professions. Under the directorship of Doctors Dale Redig and Bruce Spivey, four planners with various backgrounds in health professions education were recruited. This group, with input and assistance of many others, within and without the Center, has developed a conceptual plan for such a School. At this point, the plan has the interest and support of a variety of health professionals throughout the country. Now that a conceptual plan is available, it remains for the University and the Center, including the individuals within the Center, to propose a specific plan for implementation and generate an estimate of resources necessary to implement this plan.

In this regard, it is necessary to shift the emphasis from the initial planning staff to individuals representative of the constituent groups within Pacific Medical Center (including Presbyterian Hospital, University of the Pacific Dental School, UOP School of Medical Sciences and the Institute of Medical Sciences) as well as the central campus of the University of the Pacific. These different interests, plus representatives of potential professions not now present within the Center, together must address themselves to the development of a final plan. A task force composed of these constituencies must be formed for the consideration and development of such a plan. The initial planners would shift from a central position to one of a supporting staff for this task force.

The formation of this task force would be a significant event in the potential life of the School. The responsibility would be shifted from the planners to the task force, who would serve as the group to coordinate the development of the final plan. Task force members would reflect their own individual interests and backgrounds, as well as their constituent bodies, and would function, indeed, as the new planning team. The task force would not be responsible to the staff (previous planning group) but, rather, to their constituent groups and their corporate entities.

Their specific charge would last from the present to the duration of the contract--November, 1973, to approximately February, 1974--and would be to:

(1) Review and react to the document, "A Report on a Feasibility Study for a School of Health Professions," dated November, 1973. If the group considers the general philosophy and direction of the report to be acceptable and, in fact, innovative and exciting, and believes that the Center should move forward in this direction, they would use the document as a point of departure from which they would

(2) Formulate a plan for PMC/UOP implementation, utilizing the previous planning group in a staff and supporting role. After formulating a plan, they would

(3) Identify the resources required to carry out this formulation (i.e., implement the plan). These resources would be people, space, and financial support. The task force would also

(4) Specify a time-table for implementation. Based on these four steps, they would

(5) Develop Part III of the document, "Report on a Feasibility Study for a School of Health Professions," as a part of the final report to the Bureau of Health Resources Development. This section would represent the conclusions and specific recommended plans for implementation. The task force would further

(6) Be responsible for communicating their progress and findings regarding a School of Health Professions to the Ad Hoc Committee of the Board of Regents, University of the Pacific; the Dental faculty, UOP School of Dentistry; the Board of Trustees, Pacific Medical Center; Executive Committee and staff, Presbyterian Hospital; the Scientific Council, IMS; and to other interested bodies.

The formation of the task force is necessary because of the absolute conviction of the planning group that further consideration for implementation must, in fact, be the responsibility of the participants at the site(s) in which the School would exist. Consequently, after the task force has completed its efforts--including meeting with such representatives of the federal government and foundations as might be desirable and necessary--the task force would be charged with recommending the mechanisms, activities, and actions needed subsequent to the completion of the contract.

Because time is short and considerable deliberations will be required, it is the joint recommendation of the individuals signed below that A Task Force for Consideration of a School of Health Professions be established immediately. The individuals comprising this Task Force and the constituencies are attached. The Chairman of this group which will assume the charge listed above is also indicated.

Dale Redig, D.D.S., Dean, UOP School of Dentistry, Project Director

Bruce E Spivey

Bruce E. Spivey, M.D., Dean, UOP School of Medical Sciences, Co
Director

J Niebauer

John Niebauer, M.D., Chief of Staff, Presbyterian Hospital

Clifford F. Schwarberg, Jr., President, Pacific Medical Center

George Z. Williams

George Z. Williams, M.D., Chairman, Science Council, IMS

Alistair W McCrone (ms).

Alistair McCrone, Ph.D., Academic Vice-President, University of
Pacific

APPENDIX 15

(CITED IN CHAP. 3, VOL. I)

RESOURCES AND SERVICES OF THE
PACIFIC MEDICAL CENTER
SAN FRANCISCO, CALIFORNIA

RESOURCES AND SERVICES OF THE PACIFIC MEDICAL CENTER

San Francisco, California

The PACIFIC MEDICAL CENTER is an extensive medical complex dedicated to creating and implementing a program of excellence in patient care, medical education and research. It includes many organizations which are both legally and financially separate.

Patient Care:	Presbyterian Hospital of Pacific Medical Center, Inc., and Garden Hospital Jerd Sullivan Rehabilitation Center
Research:	Institutes of Medical Sciences
Education:	School of Dentistry, University of the Pacific School of Medical Sciences, University of the Pacific Graduate Medical Training Continuing Education Programs Regional Medical Programs Health Sciences Library
Community Health Agencies:	Lions Eye Foundation of California-Nevada, Inc. San Francisco Council on Alcoholism San Francisco Hearing and Speech Center Westside Day Treatment Center

The unique nature of this medical-health center is found in the number and proximity of so many closely related agencies, centering around Clay and Webster Streets in the Pacific Heights district of San Francisco, two miles directly west of downtown.

"Pacific Medical Center, Inc." is the legal nonprofit corporation which owns and operates the Presbyterian Hospital. It also owns adjacent buildings in which space is leased to the health agencies listed above.

Figure 1 presents a brief history of the Pacific Medical Center complex beginning in 1859, with the opening of the West's first medical school, at the University of the Pacific.

*UNIVERSITY OF THE PACIFIC

General: The University of the Pacific, established in 1851, was the first chartered institution of higher learning in California. First located in Santa Clara, it moved to its present location in Stockton in 1925.

Major divisions of the University now include: Raymond College (the first "cluster college"), Elbert Covell College (first bilingual college in the United States), Callison College (focusing on non-Western studies), the School of Education, the School of Engineering, the School of Pharmacy, the School of Law, the School of Dentistry, and the School of Medical Sciences. The School of Pharmacy currently enrolls 750 students; this is the total of the undergraduate and graduate programs. Total enrollment of the University of the Pacific, including undergraduate, graduate and professional schools, in both Stockton and San Francisco, was 5859 students in 1974.

UOP School of Dentistry: The School of Dentistry had its origins in San Francisco in 1896. The School is one of five dental schools in the state, and the only privately supported dental school in Northern California. Enrollment is now 400. Students obtain inpatient experience at Presbyterian Hospital in dentistry and oral surgery as well as in general surgery and medicine. The School provides extensive outpatient dental services in its clinic at the School in San Francisco and in several satellite clinics.

UOP School of Medical Sciences: The UOP School of Medical Sciences, established in 1968, uses the facilities and staff of both the Institutes of Medical Sciences and Presbyterian Hospital. Three degree-programs are currently offered: A Master's Degree in Learning Disabilities, a Doctor-of-Visual-Sciences Degree, and a Master's Degree in Clinical Science, providing experience and expertise to clinicians involved in health-care delivery.

FIGURE 1

HISTORICAL BACKGROUND OF PACIFIC MEDICAL CENTER

1859	Dr. Elias Samuel Cooper opens the West's first medical school, chartered as the Medical Department of the University of the Pacific.
1882	Dr. Levi Cooper Lane, his nephew, launches Cooper Medical College at the site of the present Pacific Medical Center.
1908	Cooper Medical College becomes Stanford's School of Medicine.
1918	Lane Medical Library opens.
1959	Stanford Medical School moves to its new campus at Palo Alto.
	The Institutes of Medical Sciences are organized to continue the research activities. The hospital is donated to the Presbytery of San Francisco and continues as the Presbyterian Hospital and Medical Center (1960).
1964	Institutes of Medical Sciences opens the new research building.
1967	The School of Dentistry, University of the Pacific, opens its new building.
	The corporate name of Presbyterian Hospital and Medical Center is changed to Pacific Medical Center.
1968	The School of Medical Sciences is established as a college of the University of the Pacific.
1969	Callison Memorial Hospital is merged with PMC.
1970	Ground is broken for a new 311-bed hospital, to replace Presbyterian and Callison, and to be opened in early 1973.
1971	Garden Hospital Jerd Sullivan Rehabilitation Center is affiliated with PMC.
1971-72	Planning is started for a SCHOOL OF HEALTH PROFESSIONS.
Jan. 1972	Board of Regents, University of the Pacific continues consideration of a School of Health Professions. Board designates Ad Hoc Committee for consideration of School of Health Professions.
Feb. 1972	Unanimous vote for continued development of SHP by the Executive Committee (Medical Staff) Presbyterian Hospital, PMC.
Mar. 1972	Unanimous vote by Board of Regents, University of the Pacific, to proceed in SHP feasibility study.
Aug. 1974	Completion of report of the Task Force (established December, 1973) for the consideration of a School of Health Professions.

*EDUCATIONAL PROGRAMS AND LIBRARY RESOURCES AT PACIFIC MEDICAL CENTER

Strong Internship and Residency Programs are offered at the Presbyterian Hospital. The Fellowship Program is conducted jointly by the hospital and the Institutes of Medical Sciences.

The Continuing Education Program for practicing physicians and other health professionals is one of four such post-graduate programs accredited by the American Medical Association in the state of California. There are over 30 conferences annually, ranging from one to four days.

A training program in the skills of intensive care, conducted by the medical staff of the Pacific Medical Center, and funded by California Area I Regional Medical Programs has helped over 100 physicians master recent techniques of caring for patients requiring close medical surveillance.

The Joint Health Sciences Library of Presbyterian Hospital and of the University of the Pacific School of Dentistry is now the largest non-university medical library in San Francisco. This library is integrated and housed in the Center. It was originally dedicated as the Lane Medical Library of Stanford University in 1912. The building is one of San Francisco's famous architectural structures. The Library is used by students, faculty, physicians and other individuals from throughout the Medical Center.

There exist many new and evolving educational programs both informal (e.g., developing prototype health care coordinators in the outpatient clinic) and formal (e.g., baccalaureate programs in respiratory therapy).

There are also many new and evolving educational programs, both informal (e.g., developing prototype health care coordinators in the outpatient clinics) and formal (e.g., baccalaureate programs in respiratory therapy).

*PRESBYTERIAN HOSPITAL of the Pacific Medical Center, Inc.

Background: Created in 1960, the Presbyterian Hospital inherited the half-century tradition of Stanford Hospital. Presbyterian is a general acute teaching hospital, enjoying the services of an outstanding medical staff. April, 1973, saw the opening of a new building with a 311-bed capacity.

General and Referral Services: Today the hospital is increasingly known for its care of the acutely ill patient. In recent years half of the 15,000 annual patients came from outside San Francisco, many being referred from Northern California and from the western states for special care in such areas as heart surgery, orthopedics, ophthalmology and nephrology. The total hospital employment is approximately 1250, including 250 active medical staff physicians; 350 physicians holding associate,courtesy and consulting positions; 85 house staff; and 300 nurses.

Medical services are rendered by twenty-two specialty departments. Among the unique facilities at Presbyterian are the cardio-pulmonary care unit (equipped with highly advanced computer monitoring instrumentation), the artificial kidney unit (one of two such centers accredited by the state for the Bay Area), a bio-clean laminar air flow operating room, extensive inhalation therapy facilities, and the new inpatient rehabilitation wing (where patient rooms are adjacent to physical and occupational therapy facilities).

Outpatient Clinics: There are 30,000 patient visits made annually at the hospital's numerous outpatient clinics, which are staffed by interns and residents as well as by 110 private physicians who volunteer their services.

• INSTITUTES OF MEDICAL SCIENCES

The Institutes of Medical Sciences were organized as a non-profit corporation in 1959, to continue research activities previously performed at Stanford Medical School. IMS is closely associated with Pacific Medical Center because of its emphasis on patient-oriented research. Many of its senior research members are on the medical staff at Presbyterian Hospital, several being department chairmen. The Institutes now employ approximately 150 research and supporting staff conducting medical research under government and foundation grants totaling approximately $2 million.

IMS consists of four separate sub-institutes:

- Heart Research Institute: A major HRI project is a unique computer-based patient monitoring system. Physiological measurements are made continuously on patients in the cardio-pulmonary unit in Presbyterian Hospital. These data are processed by the computer so as to predict and thereby prevent imminent complications. The Bramson membrane oxygenator and heart-lung machine was developed here and initially used in open heart surgery at the hospital.

- Institute of Neurological Sciences: Major efforts are directed toward the diagnosis, prevention and treatment of catastrophic neurological diseases such as stroke, Parkinson's Disease and amyotrophic lateral sclerosis (ALS).
- Institute of Health Research: To detect the subtle changes occurring in the human being which lead to disease, it is essential to describe with extreme accuracy the individual's health state through sensitive clinical and physiological measurements. This Institute is engaged in the development of a scientific laboratory data base for defining optimum health.
- Smith-Kettlewell Institute of Visual Sciences: This Institute has developed research tools and techniques into valuable diagnostic tools now widely used by practicing physicians. One exceptionally exciting project now under way is a vision substitution system for blind persons. It uses a television camera as an artificial eye, changing the TV image into a form that is detectable by the skin.

The Research Data Facility operates within the Institutes of Medical Sciences. Specialists in computer sciences and biomedical engineering assist researchers in each of the IMS institutes in the application of computer technology to patient care.

*GARDEN HOSPITAL JERD SULLIVAN REHABILITATION CENTER, INC.

Garden Hospital was founded in 1890 and now contains 132 beds serving patients in need of rehabilitation and extended care. It is located within two miles from the Pacific Medical Center.

The Jerd Sullivan Rehabilitation Center, founded in 1945, merged with Garden Hospital in January, 1970. Its outpatient facilities at

Pacific Medical Center provide occupational, physical and inhalation therapy, cardiac reconditioning, and pre-natal conditioning. The number of therapy treatments approximates 20,000 annually.

*COMMUNITY HEALTH AGENCIES at Pacific Medical Center

The Lions Eye Foundation of California-Nevada, Inc. is composed of all Lions Clubs in California and Nevada wishing to participate. Activities are completely synchronized with the Eye Department of Presbyterian Hospital. The participation is particularly directed toward the operation of the hospital's Eye Clinic, the Eye Bank and the Eye Pathology Laboratory.

The National Council on Alcoholism, San Francisco Area, provides referral service with personal consultation to alcoholics, their families, friends and employers. It conducts public education programs, offers court school for the prevention of alcoholism, and works with business and industry to provide educational programs for employees.

The San Francisco Hearing and Speech Center, founded in 1948, provides a variety of diagnostic and rehabilitation services for outpatients with speech and hearing handicaps.

The Westside Day Treatment Center, opened in 1969, is part of the Westside Mental Health Center. Mentally ill patients referred by social workers, private physicians or any of the Westside Health Agencies become members of a therapeutic community of 35-40 patients working under the direction of a skilled staff toward mental and social rehabilitation.

APPENDIX 16-A

(CITED IN CHAP. 12, VOL. 1)

DETAILS OF DETERMINING SHP FACULTY REQUIREMENTS AT FULL OPERATIONAL LEVEL

APPENDIX 16-A

DETAILS OF ESTIMATING SHP FACULTY REQUIREMENTS AT FULL OPERATION LEVEL

I. DETERMINATION OF FACULTY COSTS

A. Calculation of Instructional Requirements

Tables 1-A through 1-F show the calculation of the faculty instructional requirements derived from the estimated curriculum schedules ("student hours") for each of the six professions within SHP (as summarized in Chapter 12 of Vol. I, and as detailed in Tables 3-A through 3-F of this Appendix). All calculations are based on a full-enrollment level of 360 students. The learning experiences referred to in Tables 1-A through 1-F and 3-A through 3-F are defined in Figure 1.

Instructional hours are the basis upon which the faculty FTE requirements are derived. An "instructional hour" includes both direct contact time with students and preparation/evaluation time. Thus, all of the fourteen types of projected student learning experiences except the "self-learning and study (without faculty)" learning experience translate into faculty instructional hours.

Explanations of the column headings in Table 1-A through 1-F follow:

(a) Curriculum: Primary-Care Physician, Nurse Practitioner, etc.

(b) Learning Experiences: E.g., lectures, seminars & practicums, etc. (See Figure 1.)

(c) Number of Students: For each individual year of the pertinent curriculum (full-enrollment level).

(d) Group Size per Faculty: The maximum number of students per one faculty member (student/faculty ratio) for a given type learning experience.

(e) Number of Groups: For a given learning experience, the number of groups required by virtue of the relevant maximum group size and of the number of students in the given curriculum. (Wherever a "group size" does not divide evenly into the number of students, an additional group has been added, thereby increasing instructional hour requirements; however, the resulting "inflation" of instructional requirements will be offset by the number of probable occasions on which the number of students participating will not reach the projected maximum group size for a given activity.)

(f) Student Hours: Total number of hours spent, per academic year, by each student, in each learning experience (from Tables 3-A through 3-F).

(g) Faculty Preparation/Evaluation Time: The number of hours, per learning experience, that a faculty member has to spend in preparation and evaluation for each hour of formal presentation or interaction with students.

(h) Faculty Hours per Student Contact Hour: The number of hours a faculty member requires for each hour of contact with students (always equals pertinent preparation/evaluation time plus one hour).

(i) Total Faculty Instructional Hour Requirements: The product of Student Hours (f), Number of Groups (e), and Faculty Hours per Student Contact Hour (h) -- that is, = (e) times (f) times (h).*

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*In order to simplify calculations, the learning experiences and student hour distributions were formulated separately for each of the six curricula. However, this should not distort the fact that there will be a heavy emphasis on interprofessional education. Many of the learning experiences are able to be "integrated" with students from several of the six professional categories; and, in fact, many of the experiences - especially the various clinical ones - are intended to be interprofessional most of the time.

Since (1) the definitions of the learning experiences and of their required faculty preparation times are constant across the six curricula, (2) since the maximum group sizes (student/faculty ratios) for given learning experiences are frequently the same (or nearly so) from profession to profession, and (3) since the faculty composition and salary structure (as explained in Chapter 12 of Volume I) has been estimated with interprofessional education in mind, this "interprofessionalization" is unlikely to alter the projected costs in any significant way. (It will be potentially cost reducing in those cases where the learning activity can absorb large numbers of students and where the maximum group size is not reached by students from one profession alone (e.g., lectures), assuming, of course, that the activity is appropriate for students of more than one profession. However, such situations may arise relatively rarely in SHP, in light of the School's emphasis on small group and individualized learning.)

FIGURE 1

DEFINITIONS OF STUDENT LEARNING EXPERIENCES FOR SHP

- LECTURES: One instructor imparting information to a large group of students (includes grand rounds).

- SEMINARS AND PRACTICUMS: Regular seminars and practicums, which are sessions of supervised practice of manual skills and techniques - e.g., giving injections, practicing interview skills - or science labs; number of students is about 20-25.

- SMALL GROUPS: Greater student/faculty interaction than in seminars (average size group about 8 students for one faculty member).

- PATIENT CARE-RELATED ACTIVITIES - CLINICAL UNITS: Consists of student observation of care-delivery by faculty (including by consulting specialists) and of supervised care-delivery by students; number of students per group is 6 for medical and dental students and 8 for others (based upon instructional component only of joint patient-care/teaching activity).

- TEAM ACTIVITIES: CONFERENCES AND SKILLS-DEVELOPMENT - CLINICAL UNITS: Includes inter- and intraprofessional student team conferences for discussion of specific patient cases and for development of generalized interprofessional teams skills; number of students per group is 6.

- OTHER AMBULATORY-CARE EXPERIENCE: Students' observation of care-delivery or their supervised delivery of care in ambulatory settings other than the SHP Clinical Units; same group size as for the patient care-related activities in the clinical units.

- INPATIENT EXPERIENCE: Consists of traditional ward clerkships and related activities.

- HOSPITAL-BASED EXPERIENCE: Consists of observation and some practice participation in various administrative systems, for the primary purpose of acquiring familiarity with the relationship between inpatient and outpatient care.

- EMERGENCY ROOM EXPERIENCE: Consists of observation of, and practice in, patient screening and patient flow, for purposes of strengthening triage skills.

- DENTAL TECHNIQUE LAB: Same kinds of learning experiences as in typical dental school technique lab.

- DENTAL SCHOOL CLINIC EXPERIENCE: Supervised delivery of care by students in a dental school clinic (as distinct from the SHP clinical units).

- RESOURCE CONSULTATION: Interaction between student and faculty members (average of 2 students with one faculty member) to deal with "content" in biomedical sciences, behavioral sciences, and clinical sciences, and with other kinds of content appropriate to the student professional category concerned; occurs within and outside of the clinical units.

- ADVISING CONSULTATION: One-to-one interaction between student and primary-care clinician adviser faculty concerning the "content" of primary-care delivery and the student's educational process and progress (e.g., evaluation, goal setting, remedial work); occurs within and outside of the clinical units.

- SELF-LEARNING AND STUDYING (WITHOUT FACULTY): The time the student spends in reading, working with various self-instructional materials, performing self-evaluations, etc. This is the only kind of learning experience not pertinent to the computation of faculty instructional requirements (and to the faculty FTE derived therefrom).

TABLE 1-A

CALCULATION OF FACULTY INSTRUCTIONAL HOUR REQUIREMENTS:

PRIMARY-CARE PHYSICIAN CURRICULUM

(Total faculty instructional hours requirements - Col. i - are calculated by multiplying Columns e x f x h.)

a	b	c	d	e	f	g	h	i
Curriculum	Learning Experience*	Number of Students	Group Size per Faculty	Number of Groups (=c÷d)	Student Hours**	Faculty Preparation Time	Faculty Hours per Student Contact Hour	Total Faculty Instructional Hour Requirements (=e x f x h)***
PRIMARY-CARE PHYSICIAN	Lectures	50	∞	1	286	2	3	858.0
	Seminars & Practicums	50	25	2	340.6	1	2	1362.4
	Small Groups	50	8	7	248.4	.5	1.5	2608.2
	Patient Care-Related Activities - Clinical Units	50	6	9	1428	.1	1.1	14,137.2
	Team Activities - Clinical Units	50	6	9	595.4	.5	1.5	8037.9
	Other Ambulatory-Care Experience	50	6	9	387	.1	1.1	3831.3
	Inpatient Experience	50	4	13	510	.1	1.1	7293.0
	Resource Consulting	50	2	25	199	.1	1.1	5472.5
	Advising Consulting	50	1	50	146	.1	1.1	8030.0
								Total Hours = 51,630.5

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* See Figure 1 for definitions of learning experiences.

** From Table 3-A. The total hours do not add to the 7300 Shown in Table 3-A because of the omission of 3159.6 hours in Self-learning and Studying (Without Faculty).

*** Includes actual contact time with students and preparation time. (Instructional hours are assumed to constitute 55% of the activities of each FTE faculty - see Chapter 12, Vol. I.)

* *

TABLE 1-B

CALCULATION OF FACULTY INSTRUCTIONAL HOUR REQUIREMENTS:

PRIMARY-CARE DENTIST

(Total faculty instructional hours requirements - Col. i - are calculated by multiplying Columns e x f x h.)

a	b	c	d	e	f	g	h	i
Curriculum	Learning Experience*	Number of Students	Group Size per Faculty	Number of Groups (=c÷d)	Student Hours**	Faculty Preparation Time	Faculty Hours per Student Contact Hour	Total Faculty Instructional Hour Requirements (=e x f x h)***
PRIMARY-CARE DENTIST	Lectures	30	∞	1	431	2	3	1293.0
	Seminars & Practicums	30	25	2	414.8	1	2	1659.2
	Small Groups	30	8	4	245.4	.5	1.5	1472.4
	Patient Care-Related Activities - Clinical Units	30	6	5	1357.8	.1	1.1	7467.9
	Team Activities - Clinical Units	30	6	5	562.7	.5	1.5	4220.3
	Other Ambulatory Care Experience	30	6	5	184	.1	1.1	1012.0
	Dental School Clinic Experience	30	4	8	780	.1	1.1	6864.0
	Dental Technique Lab	30	20	2	920	.1	1.1	2024.0
	Resource Consulting	30	2	15	146	.1	1.1	2409.0
	Advising Consulting	30	1	30	146	.1	1.1	4818.0
								Total Hours =33,239.8

---

* See Figure 1 for definitions of learning experiences.

** From Table 3-B. The total hours do not add to the 7300 shown in Table 3-B because of the omission of 2112.3 hours in Self-learning and Studying (Without Faculty).

*** Includes actual contact time with students and preparation time. (Instructional hours are assumed to constitute 55% of the activities of each FTE faculty - see Chapter 12, Vol. I.)

TABLE 1-C

CALCULATION OF FACULTY INSTRUCTIONAL HOUR REQUIREMENTS:

HEALTH CARE COORDINATOR CURRICULUM

(Total faculty instructional hours requirements - Col. i - are calculated by multiplying Columns e x f x h.)

a	b	c	d	e	f	g	h	i
Curriculum	Learning Experience*	Number of Students	Group Size per Faculty	Number of Groups (=c÷d)	Student Hours**	Faculty Preparation Time	Faculty Hours per Student Contact Hour	Total Faculty Instructional Hour Requirements (=e x f x h)***
HEALTH CARE COORDINATOR	Lectures	60	∞	1	326	2	3	978.0
	Seminars & Practicums	60	20	3	254	1	2	1524.0
	Patient Care-Related Activities - Clinical Units	60	8	8	434.8	.1	1.1	3826.3
	Team Activities - Clinical Units	60	6	10	199.4	.5	1.5	2991.0
	Emergency Room Experience	60	8	8	140	.1	1.1	1232.0
	Hospital-Based Experience	60	8	8	154	.1	1.1	1355.2
	Resource Consulting	60	2	30	33.8	.1	1.1	1115.4
	Advising Consulting	60	1	60	24	.1	1.1	1584.0
							Total Hours =	14,606.0

* See Figure 1 for definitions of learning experiences.

** From Table 3-C. The total hours do not add to the 2400 shown in Table 3-C because of the omission of 834 hours in Self-learning and Studying (Without Faculty).

*** Includes actual contact time with students and preparation time. (Instructional hours are assumed to constitute 55% of the activities of each FTE faculty - see Chapter 12, Vol. I.)

**

TABLE 1-D

CALCULATION OF FACULTY INSTRUCTIONAL HOUR REQUIREMENTS:

NURSE PRACTITIONER CURRICULUM

(Total faculty instructional hours requirements - Col. i - are calculated by multiplying Columns e x f x h.)

a	b	c	d	e	f	g	h	i
Curriculum	Learning Experience*	Number of Students	Group Size per Faculty	Number of Groups (=c÷d)	Student Hours**	Faculty Preparation Time	Faculty Hours per Student Contact Hour	Total Faculty Instructional Hour Requirements (=e x f x h)***
NURSE PRACTITIONER	Lectures	20	∞	1	192	2	3	576.0
	Seminars & Practicum	20	20	1	192	1	2	384.0
	Patient Care-Related Activities - Clinical Units	20	8	3	624	.1	1.1	2059.2
	Team Activities Clinical Units	20	6	4	216	.5	1.5	1296.0
	Other Ambulatory Care Experience	20	8	3	96	.1	1.1	316.8
	Resource Consulting	20	2	10	76.8	.1	1.1	844.8
	Advising Consulting	20	1	20	24	.1	1.1	528.0
								Total Hours = 6,004.8

* See Figure 1 for definitions of learning experiences.

** From Table 3-D. The total hours do not add to the 2400 shown in Table 3-D because of the omission of 979.2 hours in Self-learning and Studying (Without Faculty).

*** Includes actual contact time with students and preparation time. (Instructional hours are assumed to constitute 55% of the activities of each FTE faculty - see Chapter 12, Vol. I.)

TABLE 1-E

CALCULATION OF FACULTY INSTRUCTIONAL HOUR REQUIREMENTS:

SOCIAL WORKER CURRICULUM

(Total faculty instructional hours requirements - Col. i - are calculated by multiplying Columns e x f x h.)

a	b	c	d	e	f	g	h	i
Curriculum	Learning Experience*	Number of Students	Group Size per Faculty	Number of Groups (=c÷d)	Student Hours**	Faculty Preparation Time	Faculty Hours per Student Contact Hour	Total Faculty Instructional Hour Requirements (=e x f x h)***
SOCIAL WORKER	Lecture	20	∞	1	144	2	3	432.0
	Seminars & Practicum	20	20	1	240	1	2	480.0
	Patient Care-Related Activities - Clinical Units	20	8	3	518.4	.1	1.1	1710.7
	Team Activities Clinical Units	20	6	4	216	.5	1.5	1296.0
	Other Ambulatory Care Experience	20	8	3	288	.1	1.1	950.4
	Resource Consulting	20	2	10	48	.1	1.1	528.0
	Advising Consulting	20	1	20	24	.1	1.1	528.0
								Total Hours = 5925.1

* See Figure 1 for definitions of learning experiences.

** From Table 3-E. The total hours do not add to the 2400 shown in Table 3-E because of the omission of 921.6 hours in Self-learning and Studying (Without Faculty).

*** Includes actual contact time with students and preparation time. (Instructional hours are assumed to constitute 55% of the activities of each FTE faculty - see Chapter 12, Vol. I.)

* *

TABLE 1-F

CALCULATION OF FACULTY INSTRUCTIONAL HOUR REQUIREMENTS:

PHARMACIST CURRICULUM

(Total faculty instructional hours requirements - Col. i - are calculated by multiplying Columns e x f x h.)

a	b	c	d	e	f	g	h	i
Curriculum	Learning Experience*	Number of Students	Group Size per Faculty	Number of Groups (=c÷d)	Student Hours**	Faculty Preparation Time	Faculty Hours per Student Contact Hour	Total Faculty Instructional Hour Requirements (=e x f x h)***
PHARMACIST	Patient Care-Related Activities - Clinical Units	20	8	3	921.6	.1	1.1	3041.3
	Team Activities Clinical Units	20	6	4	240	.5	1.5	1440.0
	Resource Consulting	20	2	10	81.6	.1	1.1	897.6
	Advising Consulting	20	1	20	14.4	.1	1.1	316.8
								Total Hours = 5695.7

* See Figure 1 for definitions of learning experiences.

** From Table 3-F. The total hours do not add to the 2400 shown in Table 3-F because of the omission of 1142.4 hours in Self-learning and Studying (Without Faculty).

*** Includes actual contact time with students and preparation time. (Instructional hours are assumed to constitute 55% of the activities of each FTE faculty - see Chapter 12, Vol. I.)

B. Derivation of Faculty FTE Requirements

The annual faculty requirements, expressed in full-time equivalents (F.T.E.), for each type of curriculum, are developed in Table 2. The calculation is done by dividing the total required faculty instructional hours from Tables 1-A through 1-F by 1056 instructional hours per faculty per year. The 1056 hours represent 55% of the total 1920 hours per full-time faculty per year* that are assumed to be spent in instructional activities (i.e., student contact and preparation/evaluation time).** This method of calculation results in the total full-time equivalent faculty requirement for SHP, not just in that needed to cover the instructional requirements.

C. Development of Total Student Hours

The total student hours per year for each of the six curricula, broken down by type of learning experience, are developed in Tables 3-A through 3-F.

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*Based on a 48-hour week, 40-hour-per-week professional work year.

**The remaining 45% is assumed to be spent, on the average, in curriculum development (5%), patient-care and/or research (30%), and administration and committee responsibility (10%). The rationale behind this assumed distribution of faculty effort is explained in Chapter 12 of Volume I of this report.

TABLE 2

DERIVATION OF FACULTY FTE REQUIREMENTS FOR A SCHOOL OF HEALTH PROFESSIONS

a	b	c	d
Curriculum	Total Faculty Instructional Hours Required (rounded)*	Number of Instructional Hours per Full-Time Faculty per Year	Full-Time Faculty Equivalent Requirements (=b÷c)
Medical	51,631	1,056**	48.9
Dental	33,240	1,056	31.5
Health Care Coordinator	14,606	1,056	13.8
Nurse Practitioner	6,005	1,056	5.7
Social Work	5,925	1,056	5.6
Pharmacy	5,696	1,056	5.4
		TOTAL (all curricula)	110.9 F.T.E.

---

*From Column i, Tables 1A - 1F, respectively.

**Based on a total of 1,920 professional hours per academic year (48 weeks/year, 40 hours/week) of which 55% are assumed to be spent in direct student contact and preparation/evaluation time.

TABLE 3-A

ESTIMATED PRIMARY-CARE PHYSICIAN CURRICULUM SCHEDULE

By Week and by Curricular Stages for one Year*

CURRI-CULAR STAGE	ESTIMATED DURATION IN ACADEMIC WEEKS**	AVERAGE NUMBER OF HOURS BY TYPE OF LEARNING EXPERIENCE																					
		Lectures		Seminars & Practicums		Small Groups		Patient-Care Related Activities - Clinical Units		Team Activities-Clinical Units		Other Ambulatory-Care Experience		Inpatient Experience		Resource Consultation		Advising Con-sultation		Self-Learning & Studying (without faculty)		TOTALS: ALL LEARNING EXPERIENCES	
		Per Week	Per Stage	Per Week	Per Stage	Per Week	Per Stage	Per Week	Per Stage	Per Week	Per Stage	Per Week	Per Stage	Per Week	Per Stage	Per Week	Per Stage	Per Week	Per Stage	Per Week	Per Stage	Per Week	Per Stage
Stage 1	8	3	24	3.2	25.6	4.8	38.4	1.8	14.4	.8	6.4	3	24	3	24	.9	7.2	1	8	28.5	228	50	400
Stage 2	52	3	156	3	156	2	104	3.6	187.2	1.5	78	2	104	3	156	1.1	57.2	1	52	29.8	1549.6	50	2600
Stage 3	23	0	0	0	0	0	0	12	276	5	115	0	0	10	230	1.5	34.5	1	23	20.5	471.5	50	1150
Stage 4	53	2	106	3	159	2	106	16.8	890.4	7	371	3	159	0	0	1.7	90.1	1	53	12.5	715.5	50	2650
Stage*** 5	10	0	0	0	0	0	0	6	60	2.5	25	10	100	10	100	10	10	1	10	19.5	195	50	500
Stages 1-5	146		286		340.6		248.4		1428		595.4		387		510		199		146		3159.6		7300

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* This table presupposes the School's having reached an enrollment such that there are medical students in all 5 curricular stages; this represents a "snap-shot" of a single year in time out of the estimated three-year duration of the medical curriculum.

** Refers to academic year of 48 weeks, each of 50 student hours, spent in SHP academic activities.

*** While stage 5 is optional (see Chapter 2 of Volume I of this report), it is included for all students for purposes of cost projection.

TABLE 3-B

ESTIMATED PRIMARY-CARE DENTIST CURRICULUM SCHEDULE

By Week and by Curricular Stage for one Year*

CURRICULAR STAGE	ESTIMATED DURATION IN ACADEMIC WEEKS**	AVERAGE NUMBER OF HOURS BY TYPE OF LEARNING EXPERIENCE: Lectures		Seminars & Practicums		Small Groups		Patient-Care Related Activities-Clinical Units		Team Activities-Clinical Units		Other Ambulatory-Care Experience		Dental School Clinic Experience		Dental Technique Lab		Resource Consultation		Advising Consultation		Self Learning & Studying (without faculty)		TOTALS: ALL LEARNING EXPERIENCES	
		Per Week	Per Stg.	Per Week	Per Stg.	Per Week	Per Stg.	Per Week	Per Stg.	Per Week	Per Stg.	Per Week	Per Stg.	Per Week	Per Stg.	Per Week	Per Stg.	Per Week	Per Stg.	Per Week	Per Stg.	Per Week	Per Stg.	Per Week	Per Stg.
Stage 1	8	3	24	6	48	9	72		24	1.2	9.6	-	-	-	-			1	8	1	8	25.8	206.4	50	400
Stage 2	46	4	184	3.2	147.2	-	-	4.8	220.8	2	92	4	184	-	-	20	920	1	46	1	46	10	460	50	2300
Stage 3	39	3	117	4.0	156	2	78	-	-	-	-	-	-	20	780	-	-	1	39	1	39	19	741	50	1950
Stage 4	53	2	106	1.2	63.6		95.4	21.0	1113	8.7	461.1	-	-	-	-	-	-	1	53	1	53	13.3	704.9	50	2650
Stages 1-4	146	☒	431	☒	414.8	☒	245.4	☒	1357.8	☒	562.7	☒	184	☒	780	☒	920	☒	146	☒	146	☒	2112.3	☒	7300

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* This table presupposes the school's having reached an enrollment such that there are dental students in all 4 curricular stages; this represents a "snap-shot" of a single year in time out of the estimated three-year duration of the dental curriculum.

** Refers to academic year of 48 weeks, each of 50 student hours, spent in SHP academic activities.

TABLE 1-C

ESTIMATED HEALTH CARE COORDINATOR CURRICULUM SCHEDULE

By Week and by Curricular Stages

CURRICULAR STAGE	ESTIMATED DURATION IN ACADEMIC WEEKS*	AVERAGE NUMBER OF HOURS BY TYPE OF LEARNING EXPERIENCE																			
		Lectures		Seminars & Practicums		Patient-Care Related Activities - Clinical Units		Team Activities - Clinical Units		Emergency Room Experience		Hospital-Based Experience		Resource Consultation		Advising Consultation		Self-Learning & Studying (without faculty)		TOTALS: ALL LEARNING EXPERIENCES	
		Per Week	Per Stage	Per Week	Per Stage	Per Week	Per Stage	Per Week	Per Stage	Per Week	Per Stage	Per Week	Per Stage	Per Week	Per Stage	Per Week	Per Stage	Per Week	Per Stage	Per Week	Per Stage
Stage 1	2	28	56	6	12	.6	1.2	.2	.4	1	2	1	2	.3	.6	.5	1	12.4	24.8	50	100
Stage 2	14	10	140	6	84	4.8	67.2	2	28	3	42	4	56	.7	9.8	.5	7	19	266	50	700
Stage 3	10	2	20	4.8	48	12	120	5	50	3	30	3	30	.8	8	.5	5	18.9	189	50	500
Stage 4	22	5	110	5	110	11.2	246.4	5.5	121	3	66	3	66	.7	15.4	.5	11	16.1	354.2	50	1100
Stages 1-4	48	☒	326	☒	254	☒	434.8	☒	199.4	☒	140	☒	154	☒	33.8	☒	24	☒	834	☒	2400

* Refers to academic year of 48 weeks, each of 50 student hours, spent in SHP academic activities.

(Tables 3-D, 3-E, and 3-F)

TABLE 3-D

ESTIMATED NURSE PRACTITIONER CURRICULUM SCHEDULE

By Week and by Year*

ESTIMATED DURATION IN ACADEMIC WEEKS*	AVERAGE NUMBER OF HOURS BY TYPE OF LEARNING EXPERIENCE																	
	Lectures		Seminars & Practicums		Patient-Care Related Activities - Clinical Units		Team Activities - Clinical Units		Other Ambulatory-Care Experience		Resource Consultation		Advising Consultation		Self Learning & Studying (without faculty)		TOTALS: ALL LEARNING EXPERIENCES	
	Per Week	Per Year	Per Week	Per Year	Per Week	Per Year	Per Week	Per Year	Per Week	Per Year	Per Week	Per Year	Per Week	Per Year	Per Week	Per Year	Per Week	Per Year
48	4	192	4	192	13	624	4.5	216	2	96	1.6	76.8	.5	24	204	979.2	50	2400

* * *

TABLE 3-E

ESTIMATED SOCIAL WORKER CURRICULUM SCHEDULE

By Week and by Year*

ESTIMATED DURATION IN ACADEMIC WEEKS	AVERAGE NUMBER OF HOURS BY TYPE OF LEARNING EXPERIENCE																	
	Lectures		Seminars & Practicums		Patient-Care Related Activities - Clinical Units		Team Activities - Clinical Units		Other Ambulatory-Care Experience		Resource Consultation		Advising Consultation		Self Learning & Studying (without faculty)		TOTALS: ALL LEARNING EXPERIENCES	
	Per Week	Per Year	Per Week	Per Year	Per Week	Per Year	Per Week	Per Year	Per Week	Per Year	Per Week	Per Year	Per Week	Per Year	Per Week	Per Year	Per Week	Per Year
48	3	144	5	240	10.8	518.4	4.5	216	6	288	1	48	.5	24	19.2	921.6	50	2400

* * *

TABLE 3-F

ESTIMATED CLINICAL PHARMACIST CURRICULUM SCHEDULE

By Week and by Year*

ESTIMATED DURATION IN ACADEMIC WEEKS*	AVERAGE NUMBER OF HOURS BY TYPE OF LEARNING EXPERIENCE											
	Lectures		Patient-Care Related Activities - Clinical Units		Resource Consultation		Advising Consultation		Self Learning & Studying (without faculty)		TOTALS: ALL LEARNING EXPERIENCES	
	Per Week	Per Year	Per Week	Per Year	Per Week	Per Year	Per Week	Per Year	Per Week	Per Year	Per Week	Per Year
48	19.2	921.6	5	240	1.7	81.6	.3	14.4	23.8	1142.4	50	2400

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*Refers to academic year of 48 weeks, each of 50 student hours, spent in SHP academic activities.

APPENDIX 16-B

(CITED IN CHAP. 12, VOL.1)

DETERMINATION OF EDUCATIONAL SPACE AND CAPITAL REQUIREMENTS FOR A SCHOOL OF HEALTH PROFESSIONS (AT FULL OPERATION LEVEL)

APPENDIX 16-B

DETERMINATION OF EDUCATIONAL SPACE AND CAPITAL REQUIREMENTS FOR A SCHOOL OF HEALTH PROFESSIONS AT FULL OPERATION LEVEL

The detailed derivation and computations of the educational space and capital cost requirements of a fully operational School of Health Professions are presented in Tables 1 and 2, respectively, on the following pages.

TABLE 1

DETERMINATION OF EDUCATIONAL SPACE REQUIREMENTS FOR A SCHOOL OF HEALTH PROFESSIONS - FULL OPERATION LEVEL[1]

SPACE AT SCHOOL *(By Type)*	a Capacity of Type of Space	b No. of Net Sq. Ft. per Person or Unit	c Net Sq. Ft. per Person or Unit of Space	d Number of Units Required	e Total Net Sq. Ft. Required (= cxd)	Subtotals (from Column e)	f Range Used to Cover Local Variations
Instructional Areas							
Lecture Room	120 seats	15	1,800	1	1,800		
Lecture Room	50 seats	17	850	1	850		
Seminar Rooms	25 seats	20	500	4	2,000		
Laboratory - General	25 seats	70	1,750	2	3,500		
Dental Technique Lab.[2]	30 seats	50	1,500	1	1,500		
Carrels	1	35	35	175	6,125		
Gross Anatomy Lab.[3]	.....	...	.....	...	1,900		
Teaching Support - Storage	.....	...	.....	...	2,000		
Subtotal Instructional Areas	.....	...	.....	...	.....	19,675	18,000 - 22,000 net sq. ft.
Dental School Clinic[2]	30	120	3,600	1	3,600	3,600	3,000 - 5,000 net sq. ft.
Faculty Space							
Offices (including clerical space)	1	120	120	110	13,200		
Laboratories and Support space, including faculty conference rooms and animal space:							
Basic Sciences	1	700/FTE faculty	700	20	14,000		
Clinical Sciences	1	400/FTE faculty	400	55	22,000		
General	(1)	200/FTE faculty (of which animal space=100 sq. ft.)	200	35	7,000		
Subtotal Faculty Space	.....	....	.....	...	.....	56,200	45,000 - 68,000 net sq. ft.[7]
Educational Support Space (offices, preparational areas)	.....	....	.....	...	.....	7,000	6,000 - 8,000 net sq. ft.
Library[2]							
Seating for approximately 25% of students and faculty.	1	25	25	117	2,925		
Administrative Space	.....	...	.....	...	1,000		
Stack Space	.....	...	.....	...	2,000		
Subtotal Library	.....	...	.....	...	.....	5,925	5,000 - 7,000 net sq. ft.
Administration (Offices, Clerical Areas, Conference Rooms)	1	150	150	19	2,850	2,850	2,000 - 5,000 net sq. ft.
General Support & Maintenance Space	(based on 15% of above total of 95,250 net sq. ft.)					14,288	12,000 - 18,000 net sq. ft.
TOTAL SPACE REQUIRED AT SCHOOL	.....	...	.....	...	.....	109,538 net sq. ft.	91,000 - 133,000 net sq. ft.

CONTINUATION OF TABLE 1

SPACE AT CLINICAL SITES[4] *(By Type)*	a Capacity of Type of Space	b No. of Net Sq. Ft. per Person or Unit	c Net Sq. Ft. per Person or Unit of Space	d Number of Units Required	e Total Net Sq. Ft. Required (= cxd)	Subtotals (from Column e)	f Range Used to Cover Local Variations
At Hospital							
Carrels	1	35	35	50	1,750		
Conference Rooms	12 seats	20	240	2	480		
Subtotal Hospital	....	...	....	...	.....	2,230	2,000 - 3,000 net sq. ft.
At Clinical Units							
Central Clinical Unit							
Examining Rooms - Students & Faculty	....	...	100/room	15	1,500		
Clinical Module - Dental Students	....	...	100/module	15	1,500		
Clinical Module - Faculty	....	...	100/module	2	200		
Dental Support Space	....	...	....	...	550		
Carrels	1	35	35	34	1,190		
Conference Rooms	20 seats	20	400	2	800		
Conference Rooms	40 seats	20	800	1	800		
Teaching Faculty Offices	1	100	100	5	500		
Urban and Rural Clinical Units[5]	....	...	....	...	7,000[5]		
Subtotal Clinical Units	....	...	....	...	.....	14,040[6]	14,000 - 19,000 net sq. ft.
TOTAL SPACE REQUIRED AT CLINICAL SITES	....	...	....	...	.....	16,270	16,000 - 22,000 net sq. ft.

TOTAL EDUCATIONAL SPACE REQUIREMENTS	(total of 109,538 net sq. ft. at School plus 16,270 net sq. ft. at Clinical Sites)	125,808 net sq. ft.	107,000 - 155,000 net sq. ft.

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[1] Educational refers to instructional and instructional-support or otherwise related space (in contrast to space used strictly for research or patient-care not directly related to, or supportive of, the School's educational programs).

[2] Represents only the additional space required by the SHP program, on the assumption that the site at which SHP is implemented already includes a health sciences library and a dental school--the latter including a dental clinic and a dental technique lab. (If the School is implemented at UOP/PMC, even this additional dental space would not be required, because the assumption governing SHP's implementation at UOP/PMC is that the enrollment of the UOP School of Dentistry would be reduced by a number equal to the enrollment in SHP's dental program, thereby freeing adequate space for SHP's use.)

[3] Calculated at 140 net sq. ft./4-person station, plus 80 net sq. ft. for demonstration space.

[4] The space indicated is only for SHP educational programs and is additional to the space required for carrying out the same volume of patient care without students or teachers present.

[5] The basis of calculations is the assumption that the total student capacity in each of the urban and rural clinical units will be approximately one-half of that of the central unit, resulting in an estimate of 3,500 net sq. ft. instructional space in each of these two units, for a total of 7,000 net sq. ft.

[6] Includes 7,040 net sq. ft. for the central clinical unit.

[7] Of which 5,000 - 8,000 net sq. ft. is the range applicable to space for animals.

TABLE 2

COMPUTATION OF TOTAL CAPITAL COSTS
FOR A SCHOOL OF HEALTH PROFESSIONS -
FULL-OPERATIONAL LEVEL[a]

(all figures rounded to nearest thousand, mid-1974 dollar levels)

TYPE OF SPACE	RANGE		
	Minimum		Maximum
Space at School			
Space Required (net sq. ft.)[a]	91,000		133,000
Estimated Building Efficiency at net/gross = 56%	-		-
Space Required (gross sq. ft.)	163,000		238,000
Building Cost @ $80/gross sq. ft.[b]	$13,040,000		$19,040,000
Other Costs (= 33% of Building Cost)[c]	$ 4,303,000		$ 6,283,000
Cost of Space at School	$17,343,000	to	$25,323,000
* * *	* * *		
Space at Clinical Sites			
Space Required (net sq. ft.)[a]	16,000		22,000
Estimated Building Efficiency at net/gross = 56%	-		-
Space Required (gross sq. ft.)	29,000		39,000
Building Cost @ $65/gross sq. ft.[b]	$ 1,885,000		$ 2,535,000
Other Costs (= 33% of Building Cost)[c]	$ 622,000		$ 837,000
Cost of Space at Clinical Sites	$ 2,507,000	to	$ 3,372,000
* * *	* * *		
TOTAL CAPITAL COSTS For Educational Areas	$19,850,000[d]	to	$28,695,000[d]

[a] Educational (i.e., instructional and instructional-support space only; all net square footage is from Table 1. No land costs are included because they are so widely variable and are not normally included in capital project costs.

[b] This unit cost is based on San Francisco costs and on the Engineering News Record's mid-1974 Index of Building Costs of 1, 522.

[c] Other costs, approximating 33% of the building cost, consist of architects' fees, site costs, moveable equipment, construction bond requirements, and a bid contingency (5%).

[d] The amount used for the estimated five-year capital-investment schedule (see Chapter 12) is $23,000,000.

APPENDIX 16-C

(CITED IN CHAP. 12, VOL. 1)

EXPLANATION OF INCOME PROJECTIONS FOR A SCHOOL OF HEALTH PROFESSIONS

APPENDIX 16-C

EXPLANATION OF INCOME PROJECTIONS FOR THE SCHOOL OF HEALTH PROFESSIONS

The two Tables and accompanying Notes in this appendix provide detailed calculations and explanations of the non-capital educational income projections that are presented in the financial chapter of this report (Chapter 12, Volume I).

Table 1 is an expansion of Table 8 in Chapter 12. It categorizes the total projected income into three major divisions and several subdivisions, based upon the source and/or type of funds.

Table 2 includes the same amount of projected income as Table 1, but it categorizes the projected amounts into three sections according to predictions of the relative "degree of probability" of receipt by SHP at the precise levels for each source and/or type of income as shown in Table 1.

Both Tables present projections for the academic years 1975 through 1982 and on (when full-operation level is reached); all amounts are expressed in 1974-level dollars.

Several points emphasized in Chapter 12 of Volume I should be repeated here:

- As explained in Chapter 12, Volume I, the total amount of projected income, and most of the component amounts by source, kind, or year, are considered to be conservative. Thus, the probability of SHP's obtaining income at the full projected level is considered very likely (though the Sources and/or component amounts will naturally not be precisely those shown) and therefore, the probability breakdown in Table 2 reflects an extremely conservative approach and a very fine level of distinction.
- The income projections for SHP are probably not valid for any but the precise years for which they are presented; in view of the high degree of uncertainty and contingency surrounding even short-range projections of income for health professions education in general and for the School of Health Professions in particular, neither the absolute nor the relative levels of income from year to year can be assumed to hold for any consecutive period of years other than one

running from 1975 through 1981. Naturally, the later the year within this period, the less possible it is to judge the reliability of the estimates.

- In both Tables 1 and 2, the first half of calendar year 1975 is shown as part of the "Initial Planning and Feasibility Study Stage," and the "Development Stage" is shown as lasting two years -- academic years 1975 and 1976 -- whereas in the projections of SHP's operating costs presented in Chapter 12, Volume I, this same one-half-year period is included in the "Development Stage," which then totals 2-1/2 years (i.e., January 1975 through July or August 1976). This slight discrepancy in classification does not affect the comparability of the respective cost and income projections for the two full academic years in question. (Tables 1 and 2 do not show the source(s) from which the six-month operating budget of $236,674 will be financed.)
- All assumptions and references to state sources and types of funds refer specifically to the State of California.

TABLE 1

ELABORATED VERSION OF NON-CAPITAL INCOME PROJECTIONS
FOR A SCHOOL OF HEALTH PROFESSIONS

(1974-DOLLARS; IN THOUSANDS, ROUNDED TO NEAREST THOUSAND)

ACADEMIC YEAR	A. PER CAPITA INCOME				B. SPONSORED EDUCATIONAL PROJECTS									C. BASIC OPERATING SUPPORT					D. GRAND TOTAL (A4+B9+C5)
					From Federal Sources				From State Sources (7)		From Private Foundations								
	A1	A2	A3	A4	B1	B2	B3	B4	B5	B6	B7	B8	B9	C1	C2	C3	C4	C5	
	Tuition (1)	Federal Capitation (2)	State Capitation (3)	Total (A1+A2+A3)	Total Direct Costs of Projects (4)	Portion Supporting Regular Operating Costs (5)	Indirect Cost Recovery (6)	Total Avail. to BOP (B2+B3)	Total Cost of Projects (4)	Portion Supporting Regular Operating Costs (5)	Total Cost of Projects (4)	Portion Supporting Regular Operating Costs (5)	Total Amt. Supporting Regular Operating Costs	Federal Feasibility Study & "Start-up"	State Planning Grant	Private Foundations (9)	Private Donations (8) (Unrestricted)	TOTAL (C1+C2+C3+C4)	
July '74-Dec. '74		—	—	—		—	—	—		—		—	—	508	—	—	—	508	508
Jan. '75-July '75	—	—	—	—		—	—	—		—		—	—	—	—	—	—	—	—
Subtotal: Feasibility Study and Initial Planning Stage		—	—	—		—	—	—		—		—	—	508	—	—	—	508	508
1975	—	—	—		~~75~~	38	24	62		—		75	137	—	50	—	—	50	187
1976	—	—	—		[illegible]	188	122	310		—		38	348	200	50	—	—	250	598
Subtotal: Development Stage	—	—	—		[illegible]	226	146	372		—	[illegible]	113	485	200	100	—	—	300	785
1977	130	40	80	250	~~525~~	263	171	434	~~50~~	25	[illegible]	75	534	260	—	50	50	360	1,144
1978	386	110	240	736	~~525~~	263	171	434	~~50~~	25	[illegible]	38	497	190	—	50	50	290	1,523
1979	803	210	480	1,493	~~350~~	175	114	289	~~50~~	25	~~75~~	38	352	—	—	50	50	100	1,945
1980	1,278	330	800	2,408	~~350~~	175	114	289	~~50~~	25	[illegible]	38	352	—	—	50	50	100	2,860
1981	1,698	420	1,040	3,158	~~350~~	175	114	289	~~50~~	25	~~75~~	38	352	—	—	50	50	100	3,610
Subtotal: Start-up Phase	4,295	1,110	2,640	8,045	[illegible]	1,051	684	1,735	[illegible]	125	[illegible]	227	2,087	450	—	250	250	950	11,082
1982 and on (Full Enrollment)	2,020	480	1,200	3,700	[illegible]	150	98	248	[illegible]	5	[illegible]	25	278	—	—	50	50	100	4,078

The notes for referents (1) through (9) in the table appear on the next page.

NOTES TO TABLE 1

(1)Tuition (Col. A1): Assumed annual tuition rates are: Primary-Care Physician and Dentist = $6,500; Health Care Coordinator = $3,500; Nurse Practitioner = $4,500; and Social Worker and Clinical Pharmacist = $4,000.

Tuition would be based on the estimated average length of SHP students' academic year of eleven months ("average" referring to the time-variable nature of the School's various professional curricula). For each year, the total tuition amounts were computed by multiplying the number of students by the appropriate rate. No allowance was made for rebating a portion of tuition to students who complete a "curricular year" in less than eleven months or for an incremental charge to those who require longer than eleven months. (In actual fact, it would probably be the School's policy to collect additional tuition from students who exceed the eleven months, but to not refund tuition to students who complete their curricular year early. Thus, the amounts shown may underestimate the total potential income from student tuition.)

(2)Federal Capitation (Col. A2): Computed at $2,000 per year for each medical and dental student; no capitation has been assumed for any of the other four SHP student professional categories.

(3)State Capitation (Col. A3): Computed at $8,000 per year for each medical student; the figure is based upon an interpretation of the application to SHP of the intent of California's Grunsky Bill (S.B. No. 576), which authorizes contracts between the State and private medical schools for enrollment-expansion. Further discussion of per capita-based support from the State of California is contained in Chapter 12, Volume I, of this report.

(4)Direct Costs of Sponsored Educational Projects (Cols. B1, B5, & B7): The figures in these columns represent the total direct cost, by year, of a number of outside-supported projects designed to investigate and demonstrate key features of SHP's primary-care educational programs. The estimates for the years 1975 through 1979 consist largely of the "developmental projects" (identified in Chapter 11, Volume I), apportioned among federal and foundation sponsors.

The cross-hatching indicates that the amounts entered in each of these columns are not included in the tabular cross-totals. The columns are included solely to illustrate - in conjunction with the explanention in Note (5), below - the derivation of that portion of the total income from sponsored projects that has been considered as offsetting activity and expense that is included in the School's regular operations, as costed in Chapter 12 of Volume I.

(5)Portion of Sponsored Educational Project Income Supporting Regular Operating Costs (Columns B2, B6, & B8): The amounts shown in this column are calculated at 50% of the direct costs of the projects whose direct-cost income comprised the entries in Cols. B1, B5, & B7 (on the assumption that about one-half of the level of effort and of the direct costs of these projects are covered in the regular operating budget).

(6)Indirect Cost Recovery: This item applies only to federally sponsored projects. The amounts in this column are projected at 100% of the indirect costs that have been estimated (on top of direct costs) on the federally sponsored projects included in the Col. B1-income projections. For purposes of these estimates, the assumed average indirect cost rate is 32.5% of the direct costs.

(7)State Sources of Sponsored Educational Projects (Cols B5 & B6): These projections are related to the funding trends in the State of California specifically. For 1977 through 1979, the income shown is based upon an assumption of the continuation of the Song-Brown legislation (S.B. No. 1224) concerning family practice physician training programs; projections for subsequent years are based upon modest assumptions of California's continuing interest in support for publicly responsive programs in health professions education.

(8)Federal Feasibility Study and "Start-up" Funds (Col. C1): The $508,000 shown for the period of July 1972 through December 1974 is for the feasibility study, of which this document is the final report. The precise direct cost amount is $507,701.

The amounts shown for 1976 through 1978 are based on an assumption that similar or equivalent provisions to those of "Start-up" funds for new medical and dental schools authorized in the 1971 Comprehensive Health Manpower Training Act (P.L. 92-157) will be continued in the health legislation in effect over the next few years. The amounts of income projected for SHP are based on an interpretation of the application to SHP of the assumed provisions of such legislation.

(9)Basic Operating Support from Private Foundations and Private Donors (Cols. C3 & C4): The projected amounts of $50,000 per year from each of these sources (beginning with the year the School opens) are for relatively unrestricted application toward ongoing educational programs. The estimated amounts are considered to be the minimum likely amounts that the School would receive; they do not reflect the possibility that the School's innovative approaches to improving health professions education and health-care delivery would attract large gifts - especially from individuals - to help assure the School's success.

TABLE 2

CATEGORIZATION OF TOTAL PROJECTED NON-CAPITAL INCOME FOR A SCHOOL OF HEALTH PROFESSIONS BY LEVEL OF PROBABILITY OF RECEIPT(1)

(1974-DOLLARS; IN THOUSANDS, ROUNDED TO NEAREST THOUSAND)

ACADEMIC YEAR	I. ASSURED INCOME SUBTOTAL(2)	II. LIKELY ADDITIONAL INCOME				III. POSSIBLE ADDITIONAL INCOME								IV. GRAND TOTAL OF PROJECTED INCOME(3)
		Federal Capitation	Federally Sponsored Educ. Projects	Indirect Cost Recovery (from Fed. Supp'd Proj. Only)	Subtotal	"Start-up" Funds (Federal)	State-Sponsored Educ. Projects	State Planning Grant	State Capitation	Foundation Support for Operations	Foundation-Sponsored Educ. Projects	Private Donations (Unrestricted)	Subtotal	
July '73-Dec.' 74	508	—	—	—	—	—	—	—	—	—	—	—	—	508
Jan. '75-July '75	—	—	—	—	—	—	—	—	—	—	—	—	—	
Subtotal: Feasibility Study and Initial Planning Stage	508	—	—	—	—	—	—	—	—	—	—	—	—	508
1975	—	—	38	24	62	—	—	50	—	—	75	—	125	187
1976	—	—	188	122	310	200	—	50	—	—	38	—	288	598
Subtotal: Development Stage	—	—	226	146	372	200	—	100	—	—	113	—	413	785
1977	130	40	263	171	474	260	25	—	80	50	75	50	540	1,144
1978	386	110	263	171	544	190	25	—	240	50	38	50	593	1,523
1979	803	210	175	114	499	—	25	—	480	50	38	50	643	1,945
1980	1,278	330	175	114	619	—	25	—	800	50	38	50	963	2,860
1981	1,698	420	175	114	709	—	25	—	1,040	50	38	50	1,203	3,610
Subtotal: Start-up Phase	4,295	1,110	1,051	684	2,845	450	125	—	2,640	250	227	250	3,942	11,082
1982 and on (Full Enrollment)	2,020	480	150	98	728	—	5	—	1,200	50	25	50	1,330	4,078

The notes for referents (1), (2), and (3) in the table appear on the next page.

NOTES TO TABLE 2

(1) The total and individual amounts of income included in this Table are identical with those shown in Table 1, but in this Table, they are divided into three major sections, based on the estimated probability of their receipt by SHP (see the introductory remarks in this appendix).

Income from Table 2 is divided into three sections: I. Assured Income; II. Likely Additional (to the assured); and III. Possible Additional Income (on top of the total of amounts classified under I. and II.). In developing this grouping, no changes were made from Table 1 in terms of specific assumptions concerning levels, kinds, or sources of income for any year.

The only variation between Tables 1 and 2 in the contents of the vertical columns is in the Classification of the $507,701 (rounded to $508,000) award for the School of Health Professions Feasibility Study: in Table 1 it is grouped in a column along with federal "start-up" funds (Column C); in this Table it is grouped with tuition income under the "Assured Income" section.

The amounts included for federal, state-, and private foundation-sponsored educational projects represent only those respective portions of total income of this kind that can be considered as an offset against the School's regular operating costs (see Notes (4) and (5) to Table 1) -- i.e., the amounts shown in Columns B2, B6, and B8, respectively, of Table 1. (The amounts shown in Table 2 for "indirect cost recovery" -- which applies to the federally sponsored projects only -- correspond precisely with the amounts entered in Column B3 of Table 1.)

(2) The BHRD-supported Feasibility Study for a School of Health Professions, which was conducted from July 1972 through December 1974, for a total direct contract cost of $507,701.

(3) The "grand" totals in this Column IV correspond precisely with the "grand" totals in Column D of Table 1.